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REG. U.S. PAT. OFF.

VOLUME 126, No. 19 MAY 6, 1948

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CALENDAR OF COMING EVENTS

May 9-12—National Paper Box Manufacturers Association, Annual Convention, Cincinnati, O.

May 19, 20, 21, 1948—American Pulp and Paper Mill Superintendents Association, Annual Meeting, Roosevelt Hotel, New Orleans, La.

June 11-12, 1948—Paper & Twine Association, Annual Convention, French Lick Springs, Indiana.

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Paper TRADE JOURNAL

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Superintendents Head For New Orleans

NEW YORK—As, with the coming of May, paper mill superintendents in all parts of the country turned their attention toward the annual convention of their association, the twin offices of the association were reported to be humming with final stages of preparation. Secretary-treasurer George Craigie in New York this week made public a general outline of the busy three-day program which awaits the convention as it gets down to work on May 19. Associate secretary-treasurer Harry Weston in Chicago reported that he was equally busy with his share of the plans, that he expects to unfold at greater strength on May 19 at breakfast to the press. Reports from New Orleans indicate that a distinctly crowded condition is looked for, from the pressure of reservations that have been asked for.

Though the formal program gets under way on Wednesday actual activity starts humming on Tuesday. The registration booth is to be opened at 11 o'clock on the morning of May 18. At seven that evening the annual affiliates dinner will be staged. This will be followed by motion pictures staged by Walter Glass of the Albany Felt Company.

The program of the convention gets under way on Wednesday morning at a business metting with President Raymond F. Bennett in the chair. His annual message, a report from Secretary Craigie, reports of committees, election of officers, and consideration of changes in the constitution are on the agenda for this session. This session will be followed by a general conference to be presided over by J. M. Murray of the Gaylord Container Company. Vertrees Young, vice-president of the same company, is to speak at this session.

Wednesday afternoon is to be given over to three group meetings which will be held simultaneously.

Woodroom and woods operations will supply the theme for one of these, to be presided over again by Mr. Murray. Gaylord's Alfred Suter will discuss wood room design. C. L. Durkee of the D. J. Murray Company will discuss general trends in solving chipping problems, and it is expected that a representative of the Link-Belt Company will be on hand to talk about conveyors and screens.

(Continued on page 26)

European Aid Program Allots Newsprint to Great Britain

WASHINGTON—Approximately 210,000 tons of newsprint will be supplied to the United Kingdom and Ireland in 1948-49 under the European aid program, to be supplied by Canada and financed jointly by the United States and Canada, it is learned here from official sources.

For the April-June, 1948 quarter, 52,000 tons of newsprint are to be supplied, of which 2,000 is for Ireland and 50,000 for the United Kingdom. Of the round total, 10,000 tons is for Ireland and 200,000 for United Kingdom. The program involves a cost of $52 million for 15 months, of which the United States will supply $25 million, it is stated.

The proposed shipment abroad of newsprint under U. S. - financed European relief plans was challenged late in the week by Chairman Clarence J. Brown, of the House Select Committee on Newsprint and Paper Supply, in a letter to Paul G. Hoffman, newly appointed Administrator of the Economic Cooperation Administration.

Diversion of the reported quantities of newsprint from the normal supplies to this country "would create chaos in the publishing industry of the United States," Rep. Brown warned the European relief administrator.

"Reports," said Mr. Brown, "have come to the attention of our committee that your organization is contemplating the use of American funds, placed at your disposal for foreign relief and rehabilitation activities, to purchase some 288,000 tons of Canadian newsprint for delivery to Great Britain and other European countries."

"If this action is taken it will, of course, immediately create a great shortage of newsprint for use within the United States with resultant hardship on the publishers of this country and, unquestionably, an increase in the so-called 'gray market' operations. The shortage of newsprint for use in the United States has been so great and its effects so serious, during the past few years," Mr. Brown continued, "that the Congress has seen fit to establish and continue a Select Committee on Newsprint and Paper Supply.

"The primary duty of this committee

(Continued on page 48)

License Rule Lifted for Paper Manufactures Export

WASHINGTON — Many paper manufactures may now be shipped to Europe and other foreign destination without necessity of a validated license from the Office of International Trade under a modification of earlier regulations promulgated last week.

The list which may now be shipped without an O.I.T. license includes among other paper products, uncoated book paper, cover paper, greaseproof and waterproof paper except waxed paper, and certain special papers used for explosives manufacture and wrapping; kraft wrapping paper, cigarette paper, paper towels and napkins, kraft container board, rags for paper stock, waste paper etc.

Nepco Grants $250

PORT EDWARDS, Wis.—A gift of $250 to St. Paul's Lutheran church in the town of Port Edwards by the Nepco Foundation was announced last week. Gifts from the foundation to the other six churches in the Port Edwards and Nekoosa communities were made last December.

RAYMOND F. BENNETT
Presides over Superintendents convention

Doherty is Advanced At Fernandina

FERNANDINA, Fla.—Edward Bartsch, President of Rayonier Incorporated, has appointed Fred B. Doherty as assistant resident manager of the company's mill here. Mr. Doherty is a graduate of the University of Washington, with a degree in chemical engineering, and has been associated with the company since 1933 when he joined the Grays Harbor Pulp and Paper Company, now Rayonier's Grays Harbor Division, in the state of Washington.

He was transferred in 1935, to Port Angeles, Washington, and later to the Central Chemical Laboratory at Shelton, Washington. At the laboratory, he assisted Dr. Parrett in the research work on the use of southern pine which preceded the construction of the Fernandina mill.

In 1939, Mr. Doherty became tour foreman at the Shelton mill where he continued until 1941, when he entered service with the Naval Reserve. After five years of outstanding service, during which he attained the rank of Commander, he returned to the Shelton mill and was pulp mill superintendent there when transfered to Fernandina.

Midwest Appoints Koch; Elevates Decker to Board

FORT MADISON, Ia.—R. M. Koch has joined the Mid-West Wax Paper Company as general superintendent. Mr. Koch brings to Mid-West a wealth of experience in printing, also of waxed papers, cellophane and other specialities. Under Mr. Koch's direction, plans are already underway for installation of new equipment, for improving the quality of current products and the launching of new lines to augment the old.

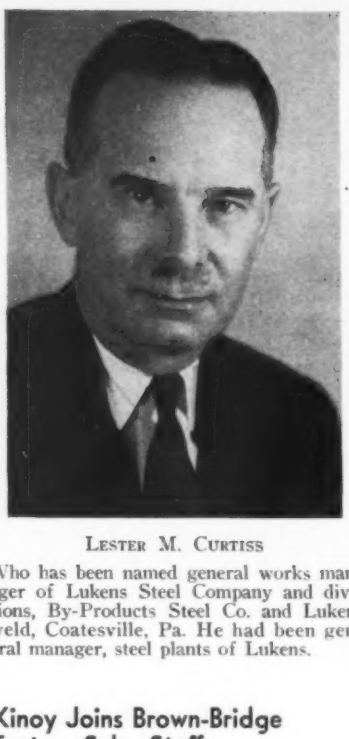
Harry G. Decker, treasurer, was elected a director of the Company, in St. Louis, on April 24th, 1948. He was simultaneously elected a director of Mid-West Packaging Materials, the parent company of the Mid-West Wax Paper Company.

This promotion to the Board of Directors is in recognition of Mr. Decker's faithful service to the company for the past 25 years.

Elgin Appoints Brandt At Minneapolis

ELGIN, Ill.—Elgin Softener Corporation has named William F. Brandt a district engineer of its Minneapolis territory, which includes Minnesota, North Dakota, South Dakota and northwestern Wisconsin.

Mr. Brandt will be located at 2552 Byrd Avenue, Minneapolis, Minnesota. He will be in charge of the sales engineering activities for the company's line of water softeners and filters, boiler water conditioning systems, water treating chemicals and other water conditioning products.



LESTER M. CURTISS

Who has been named general works manager of Lukens Steel Company and divisions, By-Products Steel Co. and Lukenweld, Coatesville, Pa. He had been general manager, steel plants of Lukens.

Kinoy Joins Brown-Bridge Eastern Sales Staff

TROY, Ohio — The Brown-Bridge Mills, Inc., has added Jerome Kinoy to the staff of the Eastern Division, under the supervision of R. S. Rowlett, with headquarters at 389 Fifth Ave., New York City.

Mr. Kinoy was a communications officer in the Air Forces and served in the Pacific. In the course of his Army service, he accumulated a thorough knowledge of radio, Radar and electronics in general which will be of inestimable value to him in furthering the sales of the many gummed materials that Brown-Bridge has to offer in the electronic industry.

Mr. Kinoy is a native New Yorker with previous experience in the paper industry and so will be a valuable adjunct to Brown-Bridge in furthering the use of its many products in the New York area.

Paterson Parchment Promotes Arthur Smith

BRISTOL, Pa. — Arthur L. Smith has been promoted to the post of eastern sales manager of the Paterson Parchment Paper Company by E. R. Leonhard, vice-president in charge of sales at the company's general office. The appointment became effective April 21st.

Mr. Smith has been with the Paterson organization since January 31, 1923, and is well known in the Eastern territory. He will make his headquarters at the New York office of the company at 120 Broadway. Mr. Smith is also in charge of the New York office.

Lukes Makes Curtiss General Works Manager

COATESVILLE, Pa.—Lester M. Curtiss who has been general manager, steel plants, of Lukens Steel Company was named general works manager of the company and its divisions, By-Products Steel Company and Lukenweld.

Mr. Curtiss joined Lukens Steel Company in 1919 as assistant engineer of tests, holding this position until 1923 when he was made engineer of tests. In 1925 he was named assistant superintendent of plate mills, serving in that capacity until 1928 when he was appointed superintendent of Lukens 140- and 206-inch mill—the world's largest plate mill. In 1932, he was promoted to be superintendent of plate mills, in charge of all mills of the Company and in 1935, he was again promoted to superintendent of production, in charge of all production facilities of the Company which position he retained until he was named assistant general superintendent in 1936. He was named general superintendent in 1939 and general manager, steel plants in 1946.

Dr. Rupert Gast Joins U. S. Testing Staff

HOBOKEN, N. J. — Dr. Rupert Gast, assistant professor of Forestry, Harvard University, has joined the Research Staff of the United States Testing Company. Dr. Gast will aid in coordinating the various laboratories of the company in major research programs, particularly biological studies.

In addition to his work in biophysics and forestry at Harvard, Dr. Gast majored in chemistry and botany at Brown University and in botany at N. Y. State College at Syracuse. In 1929-30, he was National Research Council Fellow to the State Forest Research Institute of Sweden and again visited that country in 1935 to revise research results for publication. He has collaborated with the United States Forestry Service on its studies of chemical stimulation as a method to increase gum yields in southern pines.

Ogden Brower Joins Osborne Forces

FULTON, N. Y.—Ogden Brower has resigned as executive secretary of the Gibbs-Brower Company, New York City, to become traveling representative for the Osborne Paper Mill Equipment Corporation it was announced by Mark Osborne, president of the latter concern, this week. Gibbs-Brower has been the New York agent for the Osborne concern for the past year and this move will tend to bring a closer relationship between the companies.

Mr. Brower will continue to travel by air, using his Stinson Voyager four-passenger plane and his midget motorcycle to contact paper mills throughout United States and Canada, purchasing and selling for the Osborne Corporation direct.

Suit Halts Plan for National Gypsum Mill

BUFFALO, N. Y.—The National Gypsum Company has shelved temporarily plans for the erection of a large paper mill in Baltimore until a suit instituted against the City of Baltimore through the city's Port Development Commission is settled.

National Gypsum is on the sidelines in the court battle for further expansion in Baltimore. The Circuit Court of Maryland will have to decide whether or not it is legal for Baltimore, through the Port Commission, to finance the construction of a paper mill for National Gypsum. The complaint contends it is not.

The Port Development Commission entered the picture in 1944 when National Gypsum purchased 15 acres of land in Baltimore. On part of the site, National Gypsum erected a board plant and plaster mill which recently got into full production.

On two adjacent acres of waterfront property, the city erected an unloading pier complete with handling equipment and storage sheds. The city financed the construction of the pier by a Port Development Commission loan of $1,500,000. The loan will be amortized in 30 years by rental fees paid to the city by National Gypsum.

When agreements for the paper mill were developed, the present suit was launched.

Under this proposal, National Gypsum would sell to the city all of the property—about seven acres—not containing the plaster and board plant. On part of this property the city would erect two warehouse-type buildings. National Gypsum would lease from the city the open-storage space, administrative buildings and warehouse buildings.

National would equip one of the buildings as a paper mill, making the Baltimore operation virtually self-sufficient. Paper produced in the mill would be used in the board plant. Under this plan, National's stake would be $2,800,000. The commission would put up $2,400,000.

National Gypsum would lease the city-owned facilities until 1976. During the intervening time the Port Development Commission loan would be amortized through rentals. At the end of the period, National would have the right to lease the facilities for further periods.

About two months ago, the U. S. Gypsum Company entered a bill of complaint to restrain the city from going through with this agreement with National Gypsum. U. S. Gypsum said the new construction to be financed through the sale of city stock would be a private—not public—project. It also charged that the law setting up the commission did not authorize Baltimore to use its credit for a "purely private manufacturing corporation."

President Melvin H. Baker of National Gypsum said "the outcome of this suit will in no way affect our operation of the pier and the gypsum mill. Our plans to build a paper mill on the property will be held in abeyance pending the outcome of the suit between our competitor and the City of Baltimore."

He described the plan for the paper mill as part of the company's long-range or "secondary expansion" program. The company's immediate expansion program, which involves a total outlay of around $30,000,000, is moving forward and is nearing completion, he declared.

Kieffer Breaks Ground For Mill Extension

EWING, Ind. — Ground was broken last week for a 10,000-square foot extension to the present plant of the Kieffer Paper Mills. This extension is to conform to the present plant which is of concrete foundation, monitor type building, brick walls, concrete floors and steel structure.

The building is to be used for storage and fabricating of various products manufactured by the Kieffer Paper Mills and will probably be leased to the Shoksorb Paper Products Company which fabricates much of production of the Kieffer mills, as well as handling certain surplus paper of other mills' manufacture.

The company has a fair backlog of orders, is operating six days per week, and anticipates a steady demand for its various products as long as business conditions are at today's level.

Huber Makes Progress On Mid-West Ink Plant

McCOOK, Ill.—Exterior construction of the first building of the J. M. Huber Corporation's new printing ink plant has been completed and work is now under way on the interior, Joseph S. Hart, vice-president of the ink division, announces. This is the first of several buildings to be erected on the 16-acre site at First Avenue and Route 66 which runs between Chicago and St. Louis. It is also near the A. T. & S. F. Railroad.

The building contains 40,000 square feet and is the beginning of a $500,000 project, which marks the extension of Huber's ink manufacturing operations in the Chicago area.

Paper Industry Draws 558 G.I. Trainees

WASHINGTON—A total of 558 World War II veterans are training for jobs in the paper manufacturing field under the G.I. Bill, a Veterans Administration survey has disclosed. Four hundred of the veterans are enrolled as on-the-job trainees in paper manufacturing plants, and the remaining 158 are studying paper manufacturing in educational institutions.

Powell River Aims At Increased Output

POWELL RIVER, B. C.—The year 1947 was a satisfactory one for Powell River Company, Limited. Production, sales and earnings exceeded all previous records, according to President Harold S. Foley. Reserves of standing timber were substantially increased, he declares in his annual report to shareholders. Plant was improved and enlarged and the financial position at the close of the year remained in a strong and sound condition.

Production objective for 1947, as announced at last year's general meeting, was a combined total for newsprint and saleable sulphite pulp of 280,000 tons. Powell River actually produced 283,006 tons. Combined news and pulp production objective for 1948 is 290,000 tons.

"Sales of our products," said the report, "have been limited only by our ability to produce. The continued shortage of pulp and paper products, particularly on the Pacific Coast, and generally throughout the world, has created an unprecedented demand and in certain markets fantastic prices are being offered. We have, however, followed the policy of making our products available for areas which are, and will continue to be, normal markets for our newsprint and pulp even though the sales price is considerably less than we might obtain in spot or abnormal markets. We hope this long-range sales policy will prove beneficial to both employees and shareholders.

"Production costs, as in every industry, continue to increase, the main factors being labor and material and maintenance costs. Capital expenditures for mechanization and improvements, together with close coordination between our research, engineering and manufacturing departments, has brought about improved methods of operation and economies in wood consumption, thereby partially offsetting the full impact of the increasing trend in costs. These are charts on display which illustrate this trend in costs.

"Our large hydraulic barker, which came into full operation last year, was put into three shift operation by the end of March. This was the first hydraulic barker installation in British Columbia. It allows complete utilization of wood and has reduced the use of manpower.

"As an adjunct to this large barker, a small hydraulic barker was put into operation late in July. This unit handles salvage wood and farm lot wood which could not previously be handled in our plant. We hope this installation will allow us to convert the salvage wood, which is developed in our own logging operations, into a saleable product. Unfortunately, our products can only be made (produced) from hemlock and spruce, therefore, our smallwood operating problem is greatly complicated in that salvage wood

(Continued on page 44)

FINANCE

Great Lakes Looks to Continued High Demand

TORONTO—W. Earl Rowe, president Great Lakes Paper Company, Ltd., in his annual report to shareholders, states that a strong demand continues for newsprint and pulp and that the outlook for 1948 would appear to indicate continuance of satisfactory net earnings.

Net profits, after all charges, for 1947, amounted to $1,805,159, equal to $1.59 a share on the common stock. Net income of $1,063,147 for 1946 was equivalent to $1.73 a share. Operating profits for 1947 was $5,335,435, compared with $3,837,445, while $1,003,620 was provided for depreciation and depletion and $2,030,000 for income and excess profits taxes. Earned surplus was increased by $1,181,695 to $2,834,516.

Standard newsprint production of 123,690 tons and strong bleached sulphite pulp of 49,533 tons, compared with 119,450 tons and 45,814 tons, respectively, for 1946. Net sales were increased to $15,233,068 from $11,497,212.

Balance sheet reflects the sale of $1,750,000 3½ per cent, first mortage bonds on the liabilities side, but not among current assets, working capital of $4,355,916 comparing with $4,587,164. Proceeds from the sale of the bonds are not included in current assets, but are on deposit with the trustee to finance in part the current program of capital expenditures for mill expansion, designed to increase production. They appear in another part of the assets.

Rayonier Sales and Net Rise in First Quarter

NEW YORK—Rayonier Incorporated, producers of purified wood cellulose, in its quarterly report to the stockholders shows first-quarter sales of $15,406,987, and net income of $2,460,679, representing $2.16 earned per share of common stock. This compares with sales of $11,820,711, and net income of $1,789,186, or $1.49 per share, for the corresponding period of 1947.

President Edward Bartsch states in his letter to the stockholders that, assuming profits continue at the same rate as in recent months, it is probable that increased dividend declarations on the common stock may be expected late this year.

The consolidated balance sheet of the company and its subsidiaries as of March 31, shows current assets of $24,490,143, and current liabilities of $5,907,220.

Kimberly-Clark Shades First Quarter Earnings

NEENAH, Wis. — Kimberly-Clark corporation last week reported a $1,637,266 net profit on common stock for the first quarter of 1948, compared with $1,775,289 for the first quarter of last year. This amounts to 1948 first quarter profits of $1.09 per share on 1,499,520 shares outstanding as of March 31. Last year the first quarter profits were $1.48 a share on 1,199,520 shares.

Net sales for the first quarter this year totalled $26,200,123, and the profit from operations, before taxes and interest, was $2,634,640.

Collins Asks Receiver To Protect Assets

NORTH WILBRAHAM, Mass. — The Collins Manufacturing Company, here, has moved to protect its interests, following the fire which caused $100,000 damage at its plant. Judge James C. Donnelly in Springfield Superior Court last week issued an interlocutory decree appointing a receiver for the firm. The petition for a receiver was brought by the company. In granting the company's petition, Judge Donnelly named E. H. Thompson of Longmeadow receiver, and ordered him to provide $200,000 bond, which was furnished.

In its petition asking for the appointment of a receiver, the company said that the explosion and fire had caused heavy damage to its stock and equipment, forcing the plant here in North Wilbraham to shut down.

No intimation was given as to how much the Collins company owes to its creditors, but from what was said in the Springfield court, an unusually large sum may be involved.

The company is fighting to avoid a financial crisis which would place its manufacturing status in jeopardy, or otherwise compromise its position.

Mead Sales Up Profits Are Lower

DAYTON, Ohio—The Mead Corp., and its consolidated subsidiaries, report earnings for the first twelve weeks of 1948 ended March 21st of $1,012,498.89, amounting, after preferred dividends to $1.43 per common share. This compares with $1,139,440.55 and $1.61 per common share a year ago. Sales were $19,617,223.12 for the period against $16,443,726.46 for the same period last year.

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending May 1, 1948

STOCKS

	High	Low	Last
A. P. W.	6	5⅝	6
Armstrong Cork Co.	50¼	49¾	50¼
Armstrong Cork Co., 4 pf. 4	110½	110	110½
Armstrong Cork Co., pf. 3¾	96⅝	95½	96⅝
Celotex Corp.	28¼	26⅞	28
Celotex Corp., pf.	19	18¾	18¾
Certain-Teed Products Corp.	16⅞	16¼	16¼
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	23⅛	22⅜	23
Champion Paper & Fibre Co., pf.	98	98	98
Congoleum Nairn Co.	32¾	32⅛	32⅛
Container Corp. of America	39⅝	38½	38¾
Container Corp. of America, pf.	97¼	96½	96½
Crown Zellerbach Co.	30½	30	30½
Crown Zellerbach Co., pf. 4.20	98½	98	98
Crown Zellerbach Co., 4 pf. 4	113¼	113¼	113¼
Dixie Cup Co.	38½	38⅛	38¼
Dixie Cup Co., A	53½	51½	51¾
Flintkote Co.	37⅛	36	36⅝
Flintkote Co., pf.	99⅞	99	99½
Robert Gair	8⅞	8½	8½
Robert Gair, pf.	19½	19¼	19¼
International Paper Co.	56¾	55	55
International Paper Co. pf.	96	95¼	96
Johns-Manville Corp.	37⅝	37⅛	37⅝
Johns-Manville Corp., pf.	....	....	....
Kimberly-Clark Corp.	22⅜	21½	21½
Kimberly-Clark Corp., pf.	102	101	102
Mac Andrews & Forbes	38½	37¾	37¾
Mac Andrews & Forbes, pf.	....	....	....
Marathon Corp.	21½	20⅝	21
Mead Corp.	20¼	19⅛	19⅜
Mead Corp., pf. 4¼	....	....	....
Mead Corp., pf. 2	....	....	....
National Container Corp.	13¼	12¾	13⅛
Paraffine Companies, Inc.	26¾	25½	25¾
Paraffine Companies, Inc., pf.	102	102	102
Rayonier, Inc.	28⅝	27¼	27¾
Rayonier, Inc., pf.	32⅞	32¼	32¾
Ruberoid Co.	63	60½	61
St. Regis Paper Co.	11⅜	10⅝	11¼
St. Regis Paper Co., pf.	85½	84¾	85½
Scott Paper Co	45	44½	45
Scott Paper Co., pf.	93½	93½	93½
Sutherland Paper Co.	41	39	41
Union Bag & Paper Corp.	34⅜	32⅝	33⅛
United Board & Carton	13½	13⅛	13½
U. S. Gypsum Co.	101½	96⅞	100¾
U. S. Gypsum Co., pf.	177	177	177
United Wall paper	5½	5⅛	5½
United Wallpaper, pf.	....	....	....
West Virginia Pulp & Paper Co.	45½	44½	44½
West Virginia Pulp & Paper Co., pf.	105	104½	105

BONDS

Celotex Corp., 3¼s '60	....	....	....
Certain-Teed Products Corp., 5½s '53	....	....	....
Champion Pulp & Fibre Co., 3s '65	99	98⅜	99

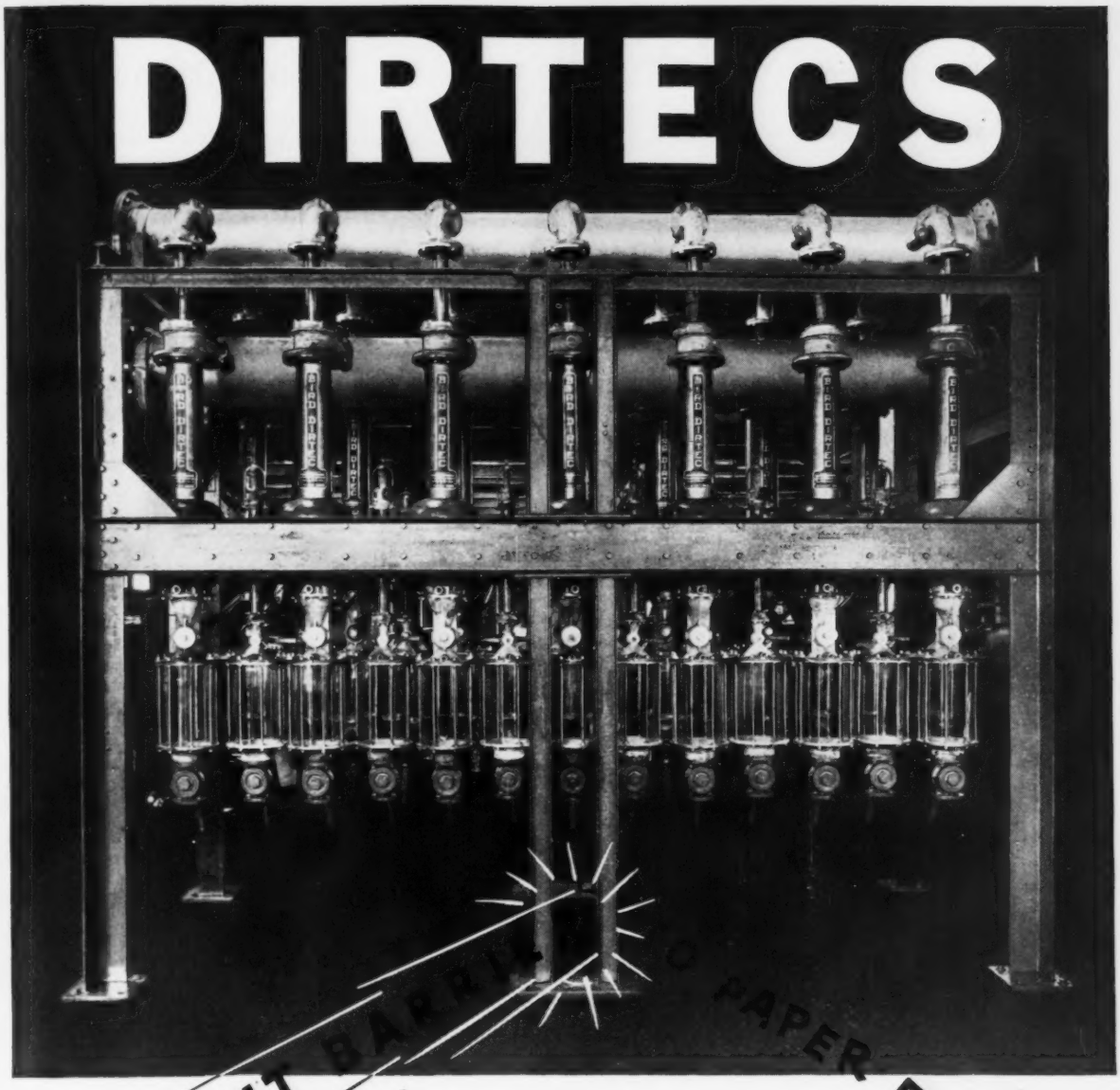
New York Curb Exchange

High, Low and Last for Week Ending May 1, 1948

STOCKS

	High	Low	Last
American Writing Paper Corp.	7½	6½	6½
Great Northern Paper Co.	41	40½	41
Taggart Corp.	11	10⅞	11

DIRTECS



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NLRB Supervises Consolidated Voting

WISCONSIN RAPIDS, Wis.—Employes of Consolidated Water Power and Paper company were voting this week in elections conducted by the National Labor Relations board on the question of authorizing their local unions to enter into agreements with the company requiring union membership as a condition of continued employment. This policy has long been in effect at Consolidated. The elections at the company's six divisions were being supervised by the NLRB regional office at Minneapolis.

Four unions are involved—International Brotherhood of Paper Makers, International Brotherhod of Pulp, Sulphite and Paper mill Workers, International Association of Machinists, and the International Brotherhod of Electrical Workers.

Employes at the Wisconsin Rapids division and electrical workers at the Plastics division voted May 3. On May 4 the Plastics division's machinists and pulp and sulphite workers cast their votes. At the Biron division members of all four unions voted on May 5. Employes at the Stevens Point division, including operators at the DuBay hydroelectric plant, voted May 6, and employes at the Wisconsin river and Appleton divisions, cast their ballots May 7, to conclude the schedule.

In another union shop election supervised by the regional office of NLRB, employees at the Ahdawagam Paper Products company of this city voted May 4 on whether they wish membership in Local 195, International Brotherhood of Pulp, Sulphite and Papermill Workers to be a condition of employment.

Wisconsin Pay Rises As Employment Holds Up

MADISON, Wis.—Employment in Wisconsin paper mills and in plants making allied products was unchanged in March compared with February, according to figures compiled by the Wisconsin State Industrial Commission. In each month there were 28,300 workers on the payroll. Average weekly payrolls, however, increased by 0.1 per cent, $1,634,000 in March and $1,632,000 in February. The average worker earned $1.30 an hour, and worked 44.3 hours during March, earning $57.64 per week.

Twenty plants in Milwaukee county reported 3,268 employes in March, a decline of 1.5 per cent. Weekly payrolls were down 3.0 per cent compared with February. Hourly earnings averaged $1.289, and weekly earnings amounted to $56.26 for 43.6 hours.

Grenier Joins Old Timers

MARINETTE, Wis.—Alfred L. Grenier has been admitted into the Marathon Quarter Century club and has received a certificate of membership and a gold watch in recognition of 25 years of service in the Menominee division of Marathon corporation, it was announced last week by H. H. Aderhold, personnel supervisor. Grenier entered the employ of the Hoskin-Morainville Paper company in March 1923, and remained as a millwright with Marathon corporation when it assumed management of the plant on April 1, 1944.

Paper Makers Council Convenes at Holyoke

HOLYOKE, Mass.—The New England District Council of Papermakers held a one-day conference here, with speakers addressing over 40 delegates on various subjects.

International Organizer Edward M. Moore of this city arranged the conference, which was presided over by President Robert Gagne of Fitchburg.

A talk on labor laws was given by Benjamin Hall of Westfield, a new member of the State Labor Commission. Frederick Richford, regional international director for the district, spoke on conditions in the papermaking industry in his area.

The main speaker was Ernest B. Lambton of Utica, N. Y., regional international director for New York State. In his talk he suggested that uniform agreements should be made between management and labor throughout the industry in which he would have included a uniform wage rate for laborers set at $1.15 an hour.

Papermakers unions here are currently holding negotiation sessions with management to discuss a new contract calling for a minimum wage scale of $1.14 an hour, as against the present minimum of 89 cents an hour.

Eagle Lodge Honors Astley on Retirement

HOLYOKE, Mass.—George Astley, 74, one of Holyoke's veteran papermakers, was honored by his associates at the Eagle Lodge No. 1, AFL, upon his retirement at the Riverside Division of the American Writing Paper Corp., recently.

A large delegation from the union waited on Astley as he completed his tour of work, and presented him with a purse. The delegation was headed by President Edward Zakzrewski and Vice-President Euclid Marchand.

Starting his career at the age of 14, Astley first worked in the wash rooms of various mills. He went to the Riverside Division 30 years ago and worked his way through the machine room winding up as a machine tender for the past several years.

He was president of Eagle Lodge during the major papermaking strike here in 1923, and also held the presidency in 1940. He was considered one of the best papermakers in the city and often his advice was sought by less experienced machine tenders both within the Eagle-A and other plants.

Ontario-Manitoba AFL Rejects Communism

TORONTO—In a conference here last week 100 delegates representing more than 10,000 Ontario and Manitoba, A.F.L. paper mill union workers moved to adopt "militant action" against communism in Canada. Commenting on what they termed "trained Russian agents in the guise of a Canadian political party attempting to infiltrate our Canadian labor movement", the delegates moved "to intensify our cooperation with free and democratically controlled trade unions in Canada to remove the causes of the growth of communism."

In a 500-word statement the delegates pointed out, however, "mere bragging will not defeat an opponent and will not hide from the victims the evils and weaknesses which do exist in our present social fabric."

The delegates were attending the twenty-fifth annual convention of the Ontario and Manitoba Paper Mill union workers. The conference was under the chairmanship of J. A. D'Aoust. The delegates are from the nine A.F.L. paper and pulp mill unions, including engineers, carpenters, sulfide workers, electrical workers, longshoremen, firemen, oilers, papermakers and steamfitters.

Southern Kraft Workers To Get Pay Increase

MOBILE, Ala.—According to a joint company-union announcement, approximately eleven thousand paper mill workers in eight plants of International Paper Company's Southern Kraft Division will receive pay raises ranging from five to 13 cents an hour, effective June 1, under a new contract negotiated April 28. The eight plants affected are located at Georgetown, S. C., Bastrop, La., Spring Hill, La., Camden, Ark., Moss Point, Miss., Panama City, Fla., and Mobile.

The contract, which is subject to ratification by union locals, covers papermakers, pulp workers, electricians, machinists and pipefitters. Current scales of pay range from $1 to $2.20 an hour, it was stated.

Kimberly-Clark Grants Clerical Wage Rise

NIAGARA FALLS, N. Y.—An agreement providing for a monthly wage increase of $17.50, plus other benefits, between the Kimberly-Clark corporation and Local 13060, a clerical workers' unit of District 50, United Mine Workers of America, has been ratified by the membership of the union, it was announced. In addition to the wage increase, the ratified agreement provides for extended sick leave, write-up on jobs and other benefits.

YOUR LIFE MAY DEPEND ON IT!

The Standard Oil Company

(An Ohio Corporation)

Midland Building

Cleveland 15, Ohio

W. T. Holliday
President

April 22, 1948

Mr. D. S. Gottesman, President
Gottesman & Company, Inc.
22 East 40th Street
New York City

Dear Mr. Gottesman:

I am taking the liberty of calling your attention to my article, "Our Final Choice" (copy attached), in the January issue of Reader's Digest - which presents the case for World Federation as the answer to the ominous situation that confronts the world today.

You may wonder why I, as the executive of a substantial industrial enterprise, should be so immediately concerned with this problem. The fact is that I am concerned for that very reason. As the head of a business, it is my obligation, on behalf of the stockholders and employees of my company, to endeavor to insure them against every possible hazard. But how can they be insured against the destruction, by another war, of the entire environment and civilization in which they operate - unless by the establishment of world law and order that would prevent war?

Does not this equally apply to you, Mr. Gottesman? Will so much as one single shred of industrial values remain for anybody, if the answer to our present international fumblings should be global war?

You are in a position to help clarify the thinking of a great many Americans. That is why I am writing you; that is why I am also enclosing the full version of my article, of which the Digest printed a condensation. May I most earnestly beg you to think deeply into this whole matter?

Frankly, I am often caught in the middle of a busy morning with a feeling of futility - with a wonder as to whether anything I may do may prove to be of any lasting consequence with respect to the people or the properties for whom I am presumed to exercise responsibility. With the potentialities of atomic and biological warfare staring me in the face, I for one am no longer content to plan on the bland assumption that nothing of this sort can happen. It may happen, and it will happen; unless something is done about it. Perhaps it is too much to ask - but will you help?

The attached material is for you to use in any way you wish. No permission is required to quote or reprint from the Digest version, provided "Reader's Digest" is given due credit.

Sincerely yours,

W. J. Holliday

OUR FINAL CHOICE

Reprinted from the Reader's Digest

By W. T. Holliday

I AM one of those terrible people, a munitions-maker. As chief executive of an oil company, my business is just as essential to war as tanks or planes. So I am supposed to welcome war as a fine thing for my business.

But the next war will not be a fine thing for my business—nor for any business. It will simply be the dead end of all our business—and of a good many other things as well. Man, at long last, has developed the instruments with which he can destroy his world—and will destroy it, unless the power to do so is taken from him.

So I put this to your common sense: If you know that down cellar in your house there is a hundred pounds of dynamite, with a fuse of a certain length attached and lit, is it your main job to see that the beds are made and the cupboard is filled?

Let us wake up! The first job of all of us today is to secure world peace. Our only alternative is World War III. The horror behind those cool words is beyond imagination. Already the scientists, in the merest babyhood of atomic power, are talking about bombs a hundred times more powerful than the Hiroshima type, which could blast New York off the earth and kill 6,000,000 people! Just as appalling, the scientists tell us, are developments in warfare by deadly bacteria.

Whenever a civilization is faced with a new and fundamental challenge, there is only one thing that can save it from decline and fall: Its men and women must change their habits of thought to meet the challenge. Either they meet their new world with new thinking, or they go under.

Do all of us realize that our present and normal state of world affairs is nothing but raw anarchy? We are living under a world condition of lawless chaos that we could not tolerate for an instant in our immediate lives.

Scholars talk about "international law," but the plain truth is that there is no such thing. Law means enforced law. To enforce law, it takes a government. And where is their international government?

Well, you say, don't we have the United Nations?

We do—for what it is. But at present the United Nations is not constructed to do the job that needs doing; let us recognize its shortcomings and try to correct them. While there is still time.

The United Nations cannot maintain world peace for the simple reason that the United Nations is not a government. It has no world laws and no power to enforce them if they existed. The United Nations is nothing but a league, a many-sided treaty signed by 57 separate nations—each of which keeps all its independent powers of deciding at any moment whether it will make war.

History is full of such agreements, from the leagues of ancient Greece down to the League of Nations. Every one has proposed to abolish war and every one has ended in war. If the league theory were all that history had to tell us about maintaining peace, the human race might as well shut up shop.

Under our noses, however, is a different fact of history that is equally well proved; it constitutes the only hope by which imperfect men in an imperfect world can live in peace together.

The Promise of Federation

What is the real meaning behind the symbol of the policeman? If you look closely at the public peace in your city, you will be reminded that you and your fellow townsmen would be completely incapable of maintaining the peace by yourselves as individuals. The policeman represents public force, wished-for order and agreed upon laws. Most important, he represents the unseen fact that you and your fellow citizens have given up your primitive, independent right to settle your own disputes with your own force, and have assigned to him the power to handle something which you are individually powerless to handle. In a word, you and your fellow citizens have federated.

The essentials of federalism are all within the policeman. He does not tell you when to get up in the morning or what to eat for supper—his powers are his assigned powers, and no more. But when you have trouble within the scope of his duties and powers, he takes charge. And it works.

It is one thing to say that a federal world government would have supreme jurisdiction in maintaining the peace. But how would it enforce this peace? Right here is where you and I must change our habits of thought. It is hard for us to think of armies and navies not belonging to separate nations but to the world as a whole. Yet it is a condition of world government that all the great weapons of mass destruction must be given up by the nations and handed over to the world government. Theoretically, the world government would have the power to make overwhelming war upon any nation that threatened world peace.

I say "theoretically" because the real nub of enforcing world peace would be something quite different. Otherwise we are back at the impossible paradox of making war upon a nation for the sake of preventing war. How do we get around that contradiction?

The writers of our Constitution were puzzled by exactly the same point. They wanted the federal laws to be obeyed in the states. But they knew the Union could not merely ask the states to enforce federal laws. And they knew that for the Union to proceed by force against a state as a whole, for the sake of punishing a few lawbreakers, would be like burning down the barn to get rid of the rats.

They solved the problem by giving the federal government the power to go straight to the individual citizen, within any state, and punish him for his violation of federal law.

And that is how federal world government would enforce world peace. Just as you and I, whether we live in Oregon or Ohio, are punished if we break the federal laws against counterfeiting, any national citizen under world government would be punished if he broke world laws against fomenting international war. If this seems an extreme break with our old habits of nationalistic thought, the fact is that the world is already moving in this direction. The principle of individual guilt for fomenting war is simply setting up Nuremberg trials before the event.

The shape of this world government is clear in outline. At the top is a world constitution. Under this, world government is embodied in a world legislature for enacting the laws to maintain peace, world courts to interpret those laws and decide disputes, a world executive body to execute the laws, and a world police to enforce them.

Arguments Against World Government

The objections to world government are numerous, but I have never once seen the statement disputed that it is the only final answer to world war. In sum the critics more or less tacitly concede world government to be necessary—and loudly declare it to be impossible. They list a variety of obstacles.

I was invited not long ago to take the side of world federation in a debate against a well-known commentator. I replied that I would be happy to debate with him, provided he would really take the other side. He must do more than point out the problems and difficulties on my side—he must argue against world federation itself as a solution for war. The gentleman declined. He said there wasn't any debate.

Some declare, for example, that national sovereignty prevents world federation, because no nation would diminish its sovereignty enough to join. Let us see what this can mean.

Outside a nation's own borders, there is no such thing as national sovereignty —meaning inherent supremacy. Within its borders, the nation is of course supreme among its subdivisions and citizens. The only touching of this aspect of sovereignty by limited world government is its power to punish national citizens for fomenting international war. In this matter, world government has the supremacy. Yet I hardly see how this takes any supremacy away from the nation, because so far as I know, in the matter of fomenting international war, no nation now exercises any rule at all over its citizens. If the nations really want war prevented under world federation, the sole "sovereignty" they would have to renounce would be the power of the nation itself to decide to wage war.

Others argue against a world government to prevent war on the grounds that it would be a negative and repressive government, a mere police-state. To go a little deeper is to see that the only repression is of disorder, and that the law and order upheld by government is the necessary foundation for everything positive in social living.

Again, it is widely asserted that the world is not yet ready for world government, even of a limited sort. The critics on this score tell us we must first have long practice in international cooperation through such agencies as a world bank, a world food authority, etc. We need such agencies. But they would be no more

capable of upholding the peace than the Universal Postal Union, a thoroughly successful example of world-wide cooperation, has been able to uphold the peace since it was founded in 1878. You cannot maintain the peace with a postman, banker, or grocer. It takes a policeman.

Last are the critics who declare that human nature itself is not spiritually ready, has not yet reached the state of perfection necessary for world federation. I am inclined to agree. Yet was human nature any nearer perfection in 1787, when our Constitution was written; will it be any nearer in 1987? The atomic bomb is not waiting for us to perfect human nature!

Program for Organization

With all its shortcomings, the United Nations provides the framework for the working world federation we need. Let us see how the job could be done.

The first step is for some nation to introduce in the General Assembly a motion that the United Nations shall call a world convention to draft a world constitution. Article 109 of the charter provides that "a general conference of the members for reviewing the present Charter" can be called by two thirds of the General Assembly and seven out of 11 of the Security Council. That "conference" would be the constitutional convention—and no single nation can veto it.

At that conference, "any alteration of the present Charter" can be recommended by two thirds of the nations represented. That "alteration" would be a federal constitution for the world—and no single nation can veto a line of it.

Now comes the rub. The next step is to submit that constitution to the nations themselves for ratification. Again under Article 109, the "alteration" shall take effect when it has been ratified by two thirds of the nations, including all the permanent members of the Security Council. In other words, one nation can stop the rest from having constitutional government.

Now that is neither reasonable nor tolerable. It is a curious fact of history that our 13 original states, as they approached federation, were restrained by exactly the same rule of all-or-none. The Articles of Confederation, under which the Constitutional Convention of 1787 was called, said that any amendment adopted must be ratified by all 13 states. How did our infant Constitution manage to come into effect under conditions so stringent?

It didn't. By a bold and wise stroke, the drafters of our Constitution ignored the Articles of Confederation and wrote the provision into the new instrument that it should be established among the ratifying states when nine out of 13 had ratified.

The delegates to a world constitutional convention would be just as bold, and just as wise, if they ignored the Charter of the United Nations and provided in the new instrument for its own ratification on more moderate terms. If two thirds of the nations can write a constitution, it would seem reasonable that two thirds of the nations could establish it among themselves.

Once this federation is established among a reasonable proportion of the world's nations, it forms an open and easily expansible system. For any nation that did not want to come in at first, there would always be a vacant chair.

Facing the Facts

Which brings us to today's constant question: What about Russia?

But that isn't the real question. The first question we must answer is this: What about the people of the United States?

We ourselves are the crux of the problem. Do we want world federation? Will we work for it? Will we lead the way? We had better know for sure what we will do, before we try guessing what somebody else will do.

The Russians are realists. And the only way to deal with realists is to give them something real to chew on. This world has no chance of abiding peace until we Americans see to it that our Government takes the lead in establishing a world order of greater and deeper realism than anything the Russians have to offer.

The Russians too are seeking an enlarging order, perhaps a world order. They call it "liberation," but the order they apparently want is an order of sheer Russian rule. In one word: empire. But an empire of force is no longer genuinely workable, as the Russians themselves prove by the suppressive measures they find necessary to take among every people they have "liberated."

Federalism is not empire. Under a world federation, the rule would be world rule, the law world law, arrived at by the voluntary cooperation of all the member nations. Which is exactly the reason for the much greater and more lasting workability—and hence superior realism—of federalism over empire.

We Americans must lead the way to federalism. If our government spoke up firmly and clearly for an immediate world federation limited to the prevention of war, I am convinced that a huge majority of the world's nations would join us at once and gladly.

I myself believe Russia would join. You may believe differently. Should Russia delay in joining, it is entirely possible to create a working and all-but-world-wide federation out of the United Nations without her help.

No one pretends that this would be an adequate solution. It would, for one thing, mean two worlds. Yet I wonder if two plainly defined worlds might not be preferable to the multiple, chaotic world we have today. At least the issue would be out in the open. And it would be a clear issue, instead of the myriad of small, sordid issues the world now finds insoluble without that clarity. And the issue would no longer lie between Russia and America, on a plane of dog-eat-dog rivalry, but between Russia with only nine percent of the world's people on one side and a federation of most, or very possibly all, the rest.

If we Americans really want an enduring peace for the world, we must make this effort toward the only true source of public peace that has ever existed: justice under law and government. We must speak up for it so that our representatives will hear and will act. One by one, whoever and wherever we are, we must stand up and be counted.

The alternative is the catastrophic destruction of our civilization.

It is better to stand up and be counted than be counted while laid out in rows.

• *Published in the Public Interest* •

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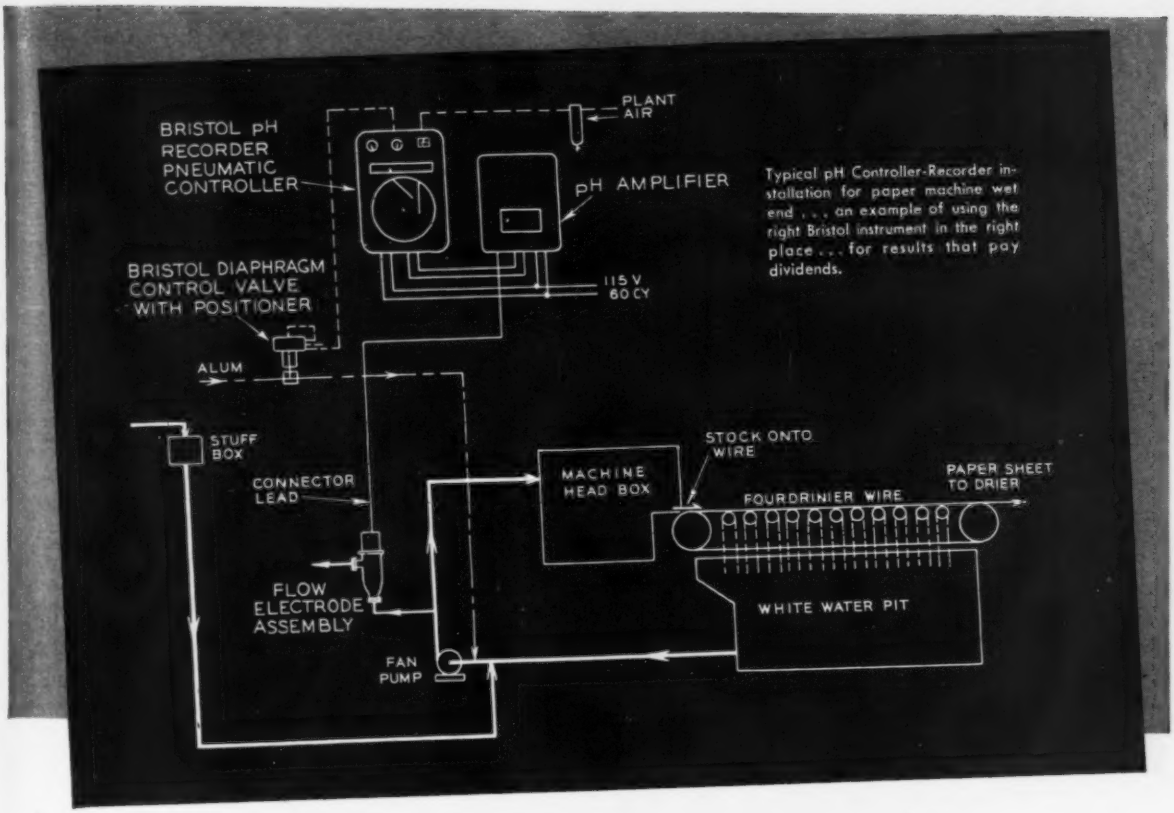

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Forest Service Sees New Tree Farm Goal

Tree-planting on farms, State and national forests, and other public and private forest land is expected to set a new record this year, the Forest Service in the U. S. Department of Agriculture declared last week. The estimate was made in connection with Arbor Day, traditional tree-planting day.

The expected new record on tree plantings is based on estimates made to the Forest Service from State foresters, and upon scheduled plans of the Forest Service for planting in national forests. Estimates from 43 States show 1948 planting goals of approximately 220 million seedlings as compared with approximately 91 million seedlings last year. Plantings in national forests this year, in addition to the State plantings, are scheduled at approximately 45 million seedlings, compared with approximately 31 million planted last year.

Since it takes about 1,000 seedlings to plant an acre, realization of State goals, along with national forest plantings, could result in a total of approximately 265,000 acres planted. The previous record was made last year when about 120,000 acres were planted.

Federal foresters said, however, that while an unprecedented interest in tree planting is evident throughout the country and the current increase in planting is encouraging, the amount of planting being done is only a drop in the bucket in comparison with the national reforestation job that needs to be done.

For the nation as a whole little more than six million acres actually have been planted as against about 75 million denuded and poorly stocked forest acres, most of which must be planted if they are not to remain idle and unproductive. Foresters estimate that at the present reforestation rate it will require several hundred years for this job.

The 152 national forests have about 1.2 million planted acres in hundreds of plantations, but also have about three million acres that require planting. Last year, public funds made available for national forest reforestation were sufficient to permit the planting of 31,000 acres, while this year's program calls for planting 45,000. At this rate, the national forest planting job would require more than 65 years, even if no additional denuded or poorly stocked land, unsuited to private ownership and operation, is added to these public forests.

Planting stock for national forests is produced in 27 nurseries now operated by the U. S. Forest Service, while 74 State nurseries produce and distribute the seedlings which go to replant farm woodlands, shelterbelts, State and other publicly owned forests.

These State nurseries are operated under a cooperative Federal-State program provided for in the Clarke-McNary and Norris-Doxey Acts which authorize Federal aid in meeting the cost of producing and distributing nursery stock for farm use. This Federal aid is handled through the Forest Service.

The planting of more trees on farms has been stimulated in recent years through the soil conservation districts. Trees for erosion control and proper land use of certain farm areas is a conventional part of the district conservation farm plans. The Soil Conservation Service in 1948 expects to produce approximately 35,000,000 trees in its nurseries for supplying soil conservation districts for demonstrational, or incentive, plantings; but the districts obtain their additional regular planting stocks from commercial sources or through the Clarke-McNary nurseries.

A.F.P.I. Distributes Tenth Forestry Ad Book

WASHINGTON, D. C.—Taking forest management as its theme, the American Forest Products Industries' tenth advertising proof book is now off the press and ready for use. Six new advertisements are provided showing ways in which woodland owners will benefit by using good forest management principles. Graphic art displays and eye-catching layouts enhance the value of the advertisements.

Four of the six ads are in three columns, while two of them are four columns. All are ten inches deep. They all come prepared in mat form.

The book also carries information about the ninth proof book issued two months ago and a free cartoon in mat form, 'Our Great America."

The books are being mailed to publishers, advertisers and forest agencies in all 48 states to aid in preparing special editions of newspapers, trade publications and house organs.

Copies of the new book may be obtained by writing the American Forest Products Industries, Inc., 1319 18th Street, N. W., Washington 6, D. C.

Swiss Paper Expert Visits This Continent

Max Schauweeker of Bern, Switzerland, is at present visiting Canada and the United States. He is agent for a Swiss pulp and paper industry and spent two weeks in New York investigating the Finnish pulp agency there. He is now visiting pulp and paper mills in British Columbia and the Pacific Northwest states. He plans to return to San Francisco and then return to Chicago and New York to spend six weeks in further research work with the Finnish agency.

Mr. Schauweeker states that Finland is at present supplying most of the raw material used in the pulp and paper industry in Switzerland.

Marinette Pays for Hints

MARINETTE, Wis.—Nine employes of the Marinette Paper company recently received $105 for suggestions concerning safety and production. Thus far in the current year the company has paid a total of $360.

Canadian Foresters Elect R. S. Laird

VANCOUVER, B. C.—R. S. Laird was elected president of the Canadian Forestry Association of British Columbia at the annual meeting in Vancouver, recently. Mr. Laird is advertising and sales manager of Bloedel, Stewart & Welch and succeeds Ralph S. Plant, who has been president of the association for the past two years.

John D. Gilmour, forester of H. R. MacMillan Export Company Ltd. was elected vice-president.

Mr. Plant reported on the growing public interest in the association since its formation here 23 years ago and stressed the importance of this work in forest protection and conservation.

"In a world where reconstruction is the keynote, timber is second only in importance to food. British Columbians live side by side with the greatest coniferous forests in the British Empire. The most important contribution we can make to our generation is to convert economically and efficiently our forest resources to world needs; and we can serve future generations by supporting every sound method of forest conservation."

George X. Miller, secretary manager, announced that the organization is planning to increase its public relations and educational work on an even wider scale, using several new mediums.

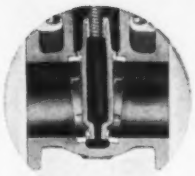
He also gave praise to the competent direction of the training camp under direction of W. F. Myring, chief warden, and chairman of the camp committee, John L. Noble.

Speakers included Charles Haddon, district forester of the forestry department, J. G. Robson, prominent lumberman, and Major Len Andrews, secretary-manager of the B. C. Lumber Manufacturers Association.

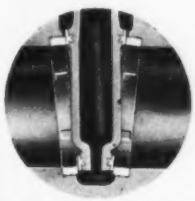
John McInnis, MLA, Prince George, Hector Munro, Clarke Gibson, Thomas Jackson, all of Vancouver, and Charles Hayden of Vernon were re-elected directors. New directors are: F. H. LeCouteur, Dr. George S. Allen, Mr. F. H. Ryan, Dr. B. G. Griffith, Dr. S. E. Maddigan and Mr. C. A. Manson, all of Vancouver.

Thilco Foremen Hear L. C. Smith

KAUKAUNA, Wis.—L. C. Smith, director of industrial relations at Thilmany Pulp and Paper company, addressed the Thilco Foremen's club May 3 in the company assembly rooms. He discussed mill problems. Louis A. Crittenton, Dayton, Ohio, of the speaking staff of the National Association of Foremen, spoke on "Foremanship—a Lullaby or a Bugle Call." The usual dinner and meeting at the Elks club were cancelled for this month because the club is being remodeled.

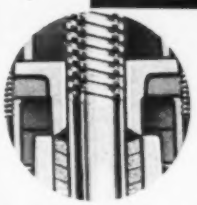


Straight-Flow Port Design reduces fluid turbulence to a practical minimum.



Seat Rings of end-seated type are screwed into the body.

Sure-Grip Malleable Handwheel for non-skid gripping even with heavy gloves.



Brass Liner on Glands assures greater resistance to corrosion and scoring.

WALWORTH

iron body gate valves

with screwed or flanged ends

... 8 Outstanding Features

For complete information on these new Walworth Iron Body Valves, see your local Walworth distributor, or write for bulletin 106.

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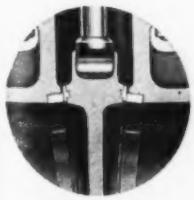
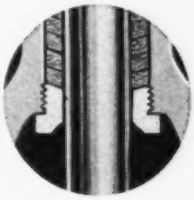
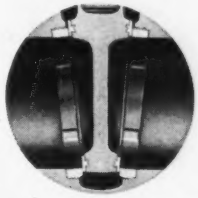


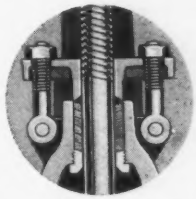
T-head Disc-to-Stem connection on OS&Y types provides stronger connection, prevents loosening of disc by corrosion.



Bronze Back-Seat Bushings in bonnets of OS&Y valves.



Solid Web Type Disc in OS&Y valves for greater strength and longer service.



Hinged Gland Eye-Bolts on OS&Y valves permit faster, easier repacking under full pressure.

Superintendents Head For New Orleans

(Continued from page 13)

Mill maintenance will supply the interest for another group meeting. Industrial insulation will be reported on by Utley W. Smith of the Magnesia Insulation Manufacturers Association. Another speaker, whose subject has not been made known also is on this program.

A coated papers session will be led by James R. Simpson of the Champion Paper and Fibre Company. Ward Wheeler of the Wheeler Roll Company will talk on supercalendaring. His paper will be followed by a panel discussion to be led by O. W. Callighan of Edgar Brothers. Members of the panel include: Edward P. Gillan, Anheuser-Busch, Inc.; James Simpson, Champion Paper and Fbre Co.: Dr. George Cramer, Sinclair & Valentine Co.; Benjamin R. Newcomb, John Waldron Co.

Thursday morning and afternoon are to be given over to more group sessions. This portion of the program as tentatively set up, includes:

9:30 A.M.—FINE PAPER AND TISSUE, Co-Chairmen: James Fish, Erving Paper Mills, Erving, Mass., Carl Welte, Champion Paper & Fibre Co., Canton, N. C.—"A New Approach to Slime Control"—Frederic A. Soderberg, General Dyestuff Corp.

Panel Discussion: "The Modern Paper Machine."

Panel Members: Moderator—Carl Welte; J. Wesley Joslyn, Sandy Hill Iron & Brass Works, Frank Sanger, Pusey & Jones Co., Leon E. Smith, Downingtown Mfg. Co., H. C. Moore, Beloit Iron Works, G. A. Petersen, Rice Barton Corp.

SULPHITE: Chairman Harold Skinner, Marathon Corp., Rothschild, Wisconsin.

"The Ideal Sulphite Mill," Lawrence W. Murtfeldt, Consolidated Water Power & Paper Co.

"Petroleum Base Pitch Control Additive for Sulphite Pulping" H. E. Corbin, Socony-Vacuum Oil Co.

"Askania Thin Stock Consistency Regulator", Wilbur F. Pray, Askania Regulator Co.

BOARD: Chairman Harry E. Hadley, Gardner-Richardson Co.

"The Application of Felts to Board Machines," by Larry Woodside, Albany Felt Co.

(Other papers to be announced later)

2:30 P.M. KRAFT Chairman, Gordon Singletary, Brunswick Pulp and Paper Co. and Claude Metcalf, Brown Paper Mill Co. "Cooking by Means of Automatic Gas-Off and Time Cycle Control"—Fred Keyes, North Carolina Pulp Co., "Some Modern Concepts of Stock Preparation"—Tony Agronin, Shartle Bros., "Recovery of Chemical Losses from Recovery Furnace Stack Gases by Cottrell Electrical Precipitators"—L. M. Roberts, C. E. Beaver and W. N. Blessing, Research Corp., Round Table Discussion, *Power (Gold Room)* Chairman—Charles Reese, Nekoosa-Edwards Paper Co., Inc. Nekoosa, Wisconsin.

GRAPHIC ARTS (University Room) Chairman—Robert W. Pattison, Chairman Writing Paper Co., Holyoke, Massachusetts.

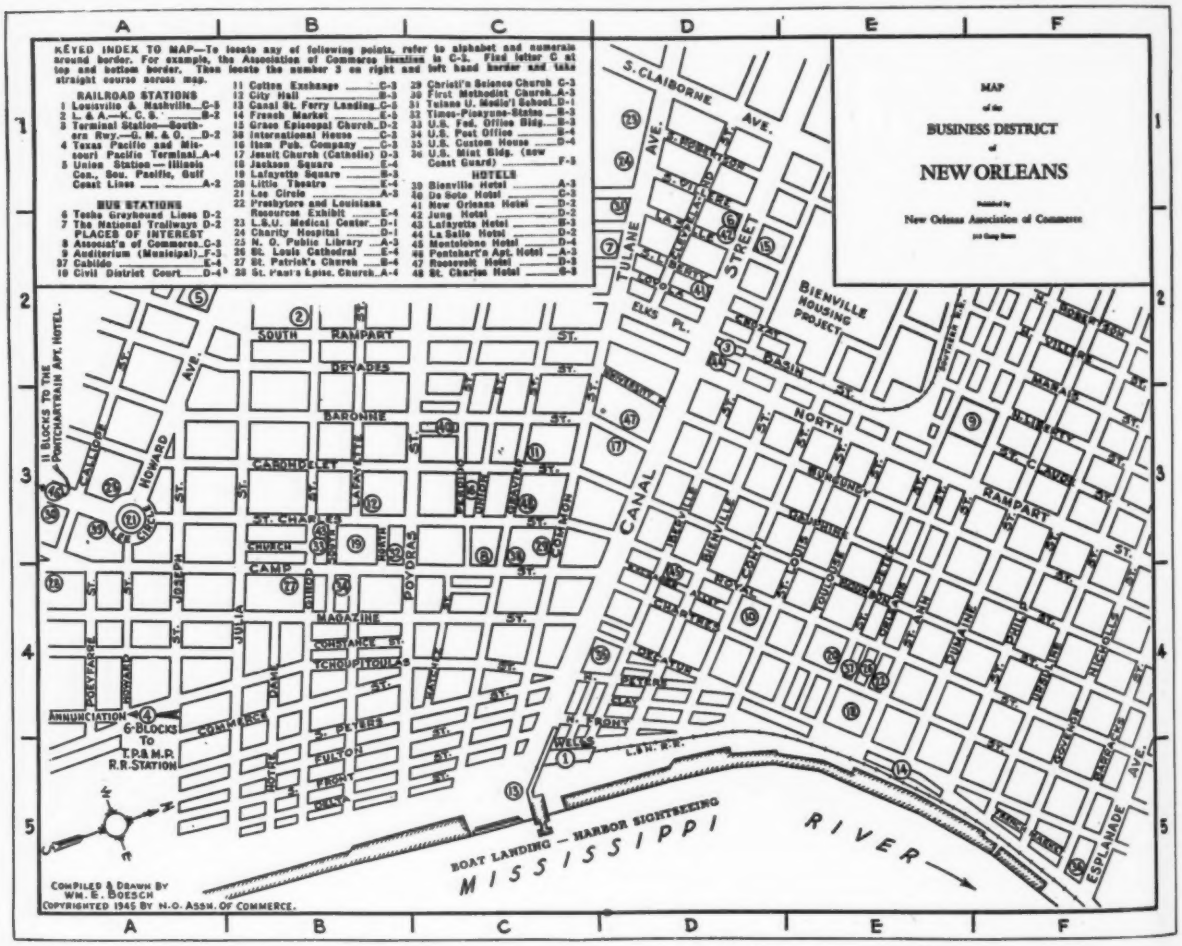
(Program to be announced later)

A joint dinner (dress informal) will be held at seven o'clock, Frank Hutton, will be toastmaster. John Eversman of Ecusta Paper Corporation will be master of ceremonies. Dancing will follow.

Friday—May 21st

8:00 A.M. Breakfast (Grand Ballroom) Judge Ray Smythe, President, International Brotherhood of Migratory Peddlers, presiding.

9:30 A.M. General Conference (Gold Room) A. G. Natwick, Crown-Zellerbach Corp., Camas, Wash., presiding.


MAP of the BUSINESS DISTRICT of NEW ORLEANS
Published by New Orleans Association of Commerce
KEYED INDEX TO MAP—To locate any of following points, refer to alphabet and numerals around border. For example, the Association of Commerce location is C-3. First letter C at top and bottom border. Then locate the number 3 on right and left hand border and take straight course across map.
RAILROAD STATIONS
1 Louisville & Nashville ..C-3
2 L. & A.—K. C. S. ..B-2
3 Terminal Station—Southern Ry.—G. M. & O. ..D-2
4 Texas Pacific and Missouri Pacific Terminal ..A-4
5 Union Station—Illinois Cen., Sou. Pacific, Gulf Coast Lines ..A-2
BUS STATIONS
6 Texas Greyhound Lines D-2
7 The National Trailways D-2
PLACES OF INTEREST
8 Associat'n of Commerce C-3
9 Auditorium (Municipal) F-3
37 Cabildo ..E-4
10 Civil District Court ..D-4
11 Cotton Exchange ..C-3
12 City Hall ..B-3
13 Canal St. Ferry Landing C-3
14 French Market ..E-3
15 Grace Episcopal Church D-2
16 International House ..C-3
17 Item Pub. Company ..C-3
18 Jesuit Church (Catholic) D-3
19 Jackson Square ..E-4
20 Lafayette Square ..B-3
21 Little Theatre ..E-4
22 Lee Circle ..A-3
22 Presbytere and Louisiana Museums Exhibit ..E-4
23 L.S.U. Medical Center ..D-1
24 Charity Hospital ..D-1
25 N. O. Public Library ..A-3
26 St. Louis Cathedral ..E-4
27 St. Patrick's Church ..B-4
28 St. Paul's Episc. Church A-4
29 Christi'n Science Church C-3
30 First Methodist Church A-3
31 Tulane U. Medic'l School D-1
32 Tieau-Pizayzee-Station ..B-3
33 U.S. Fed. Offices Bldg. ..B-3
34 U.S. Post Office ..B-4
35 U.S. Custom House ..D-4
36 U.S. Mint Bldg. (now Coast Guard) ..F-3
HOTELS
39 Bienville Hotel ..A-3
40 De Soto Hotel ..C-3
41 New Orleans Hotel ..D-2
42 Jung Hotel ..D-2
43 Lafayette Hotel ..B-3
44 La Salle Hotel ..D-2
45 Montelone Hotel ..D-4
46 Pontchart'n Apt. Hotel ..A-3
47 Roosevelt Hotel ..B-3
48 St. Charles Hotel ..C-3
S. CLAIBORNE AVE.
TULANE AVE.
CARONDELET ST.
BASIN ST.
BIENVILLE HOUSING PROJECT
ELKS PL.
SOUTH RAMPART ST.
DECATUR
BARONNE ST.
CARONDELET ST.
ST. CHARLES
CHURCH
CAMP
MAGAZINE
CONSTANCE ST.
TCHOUPITOULAS
ANNUNCIATION
COMMERCE
HOWARD AVE.
JULIA ST.
POYDRAS
CANAL
NORTH RAMPART ST.
ST. CLAUDE
DUMAINE
ESPLANADE AVE.
ELYSIAN FIELDS AVE.
ST. PETERS
FULTON
FRONT
LEVEE
DOCK
PETERS
DECATUR
L.&N. R.R.
BOAT LANDING — HARBOR SIGHTSEEING
MISSISSIPPI RIVER
11 BLOCKS TO THE PONTCHARTRAIN APT. HOTEL
6 BLOCKS TO T.P.&M.P. R.R. STATION
COMPILED & DRAWN BY WM. E. BOESCH
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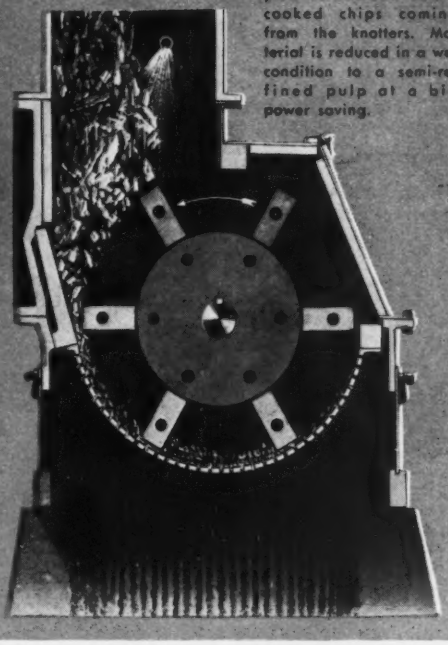
The center of New Orleans—a guide for sightseers

Pulpwood - CHIPS, SCREENINGS

Jeffrey builds a variety of handling, feeding and reduction equipment for the Pulp and Paper Mill. Chain conveyors for handling pulpwood; Belt conveyors for bark, chips and pulplap; Feeders for any number of feeding operations; Bucket elevators for handling salt cake, lime or wood chips; Re-chippers, Grinders, Shredders and Crushers for the reduction of chips, salt cake, bark, etc.

The Jeffrey Screenings Grinder (below) is a swing hammer Shredder equipped to reduce semi-cooked chips coming from the knotters. Material is reduced in a wet condition to a semi-refined pulp at a big power saving.



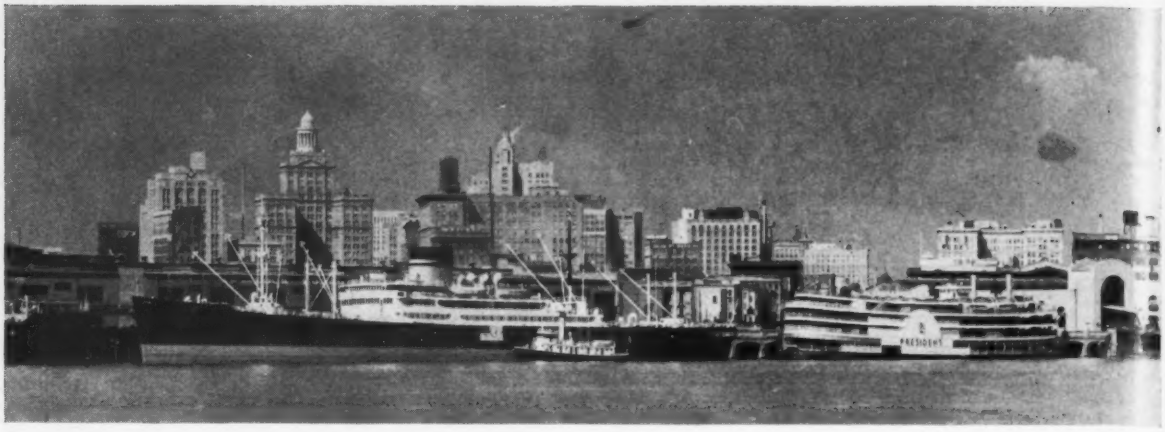
For many years Jeffrey has been serving the pulp and paper industry . . is fully qualified by experience to provide the utmost in efficient and economical handling and reduction methods. Check with the most modern mills . . you'll likely find some type of Jeffrey equipment on the job . . and remember, that Jeffrey-equipped means efficient operation.

THE JEFFREY MANUFACTURING COMPANY

ESTABLISHED 1877

931-99 North Fourth St., Columbus 16, Ohio

Complete Line of Material Handling, Processing and Mining Equipment



SKYLINE—NEW ORLEANS

Towering above the $50,000,000 port of New Orleans, the City's skyline as seen from the Mississippi River, reflects the pulsing modern city. Giant skyscrapers, housing New Orleans business jut up creating prominent landmarks. New Orleans' business district is modern in every sense of the word. Industrially speaking, more and more business concerns see in the rising skyline of New Orleans, greater industrial growth.

Subject—Employee Training. Speakers —Stanley Stumpf, Johns-Manville Corporation, Merrero, Louisiana.
(Other speakers to be announced later)

12:30 P.M.—Men's Luncheon (Grand Ballroom Charles Reese, Toastmaster Subject—Taft-Hartley Law. Speaker—Honorable Fred A. Hartley, Jr. Member of Congress, Washington, D. C.

2:30 P.M. — General Conference (Gold Room) Ollie W. Messner, 1st Vice-President , presiding. Subject—Labor Relations. Speaker — DeLoss Walker, Industrial Relations Counselor, Chicago, Ill.

6:00 P.M. — Get-Together Party (Gold Room).

7:00 P.M.—Banquet (Grand Ballroom) Dress, semi-Formal Raymond F. Bennett, President, Toastmaster. Speaker—Harry Straus, President of Ecusta Paper Corporation, Pisgah Forest, N. C. Dancing—Johnny Detroit's Orchestra.

Women's Program

Tuesday—May 18th

11:00 A.M. Registration (Mezzanine Floor).

8:00 P.M. Motion Picture (Gold Room).

Wednesday—May 19th

9:30 A.M. Registration (Mezzanine Floor).

11:30 A.M. Conducted Walking Tour of Old French Quarter—Leave Roosevelt Hotel (Registration Desk) at *11:30 A.M. Sharp.*

12:00 Noon Lunch in Patio Royal.

1:30 P.M. Resume Walking Tour of Quarter.

7:00 P.M. Dine where you will (Those wishing to dine outside the hotel are advised to make early reservation to avoid waiting.)

Thursday—May 20th

9:30 A.M. Sightseeing and Shopping.

12:00 Noon Lunch where you will.

2:00 P.M. 2½ Hour Boat Trip (Busses leave Roosevelt Hotal promptly at 2:00 P.M.).

7:00 P.M. Joint Dinner (Grand Ballroom) Entertainment Dance.

Friday—May 21st

9:30 A.M. Sightseeing and Shopping.

12:30 P.M. Ladies Luncheon (University Room).

2:30 P.M. Ladies Bingo (University Room) Conducted by John Eversman.

6:00 P.M. Get-Together Party (Gold Room).

7:00 P.M. Banquet (Grand Ballroom) Dancing.

New Orleans has been an American city for nearly a century and a half, but it was a Latin city for nearly a hundred years before that and it should be remembered that it is still one in a large measure in architecture, in government, in people and spirit. The first impression of the visitor is that in New Orleans he has discovered something unique.

The Latin influence, of course, is most evident in the Vieux Carre, or as it is popularly known, the French Quarter. To many, New Orleans and the Quarter are practically synonomous yet this viewpoint is not altogether correct even though the Quarter does contribute to a very large degree to the charm of the city as a whole. There is no other section, it is true, with the possible exception of the Garden District, in which New Orleans' distinctiveness is had in such concentrated form, for within the comparatively small area which is encompasses is all the romance and picturesqueness that can be desired of an ancient civilization, ancient, that is, as far as United States cities are concerned.

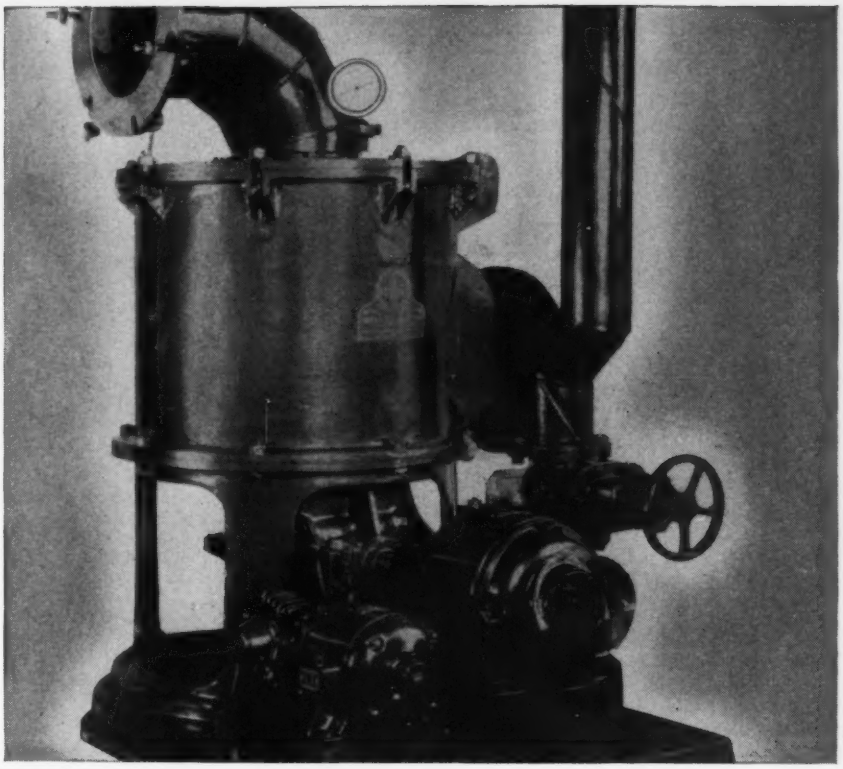
The most interesting part of the French Quarter to many is in the vicinity of Jackson Square, the old Place d'Armes, the name of which was changed in 1849 because an influential old lady, the baroness Pontalba, included General Jackson among her heroes. At any rate, the Square was at one time the heart of the old city and around it were grouped, in accordance with the plans of Adrian de Pauger in 1728, several of the most important buildings of the original city. As was natural, in or near this square took place most of the city's important historical events, notably the consummation in 1803 of the Louisiana Purchase that was the turning point not only in the history of New Orleans but of the United States.

Much of the charm of Jackson Square is due to the symmetrical arrangement of the buildings on three of its sides with the position of honor held by the old St. Louis Cathedral built in 1794, its triple spires casting long shadows over Chartres Street and into the landscaped grounds of the Square. On one side is the Cabildo, constructed shortly after the Cathedral, with funds supplied by Almonester y Roxas so that the Spanish governing body could have a suitable place in which to convene, their previous home having been destroyed in the great conflagration of 1788. On the other side of the Cathedral is the Cabildo's twin, known as the Presbytere, on which construction was begun at about the same time, but which remained uncompleted for many years because of Almonester's untimely death.

On either side of the Square are the famous Pontalba buildings, presumably the first apartment houses in America, built by the Baroness Pontalba in 1850. The apartments were considered wonderful structures in their day and if some of their freshness has gone with the passage of time, they have secured a charming, faded picturesqueness in their old age. Constructed of red brick, the two buildings are each a block in length and two stories in height and their long galleries are adorned with some of the finest cast-iron work in the city. In their high-ceilinged rooms lived for a time such notables as Jenny Lind and W. M. Thackeray.

Those who built in the Garden Dis-

(Continued on page 46)



Has longer useful life too

⅜-inch, 10% Nickel-Clad Steel was used for this pulp selectifier body; fabricated by Shartle Brothers Machine Co., Middletown, Ohio.

● ***PULP SELECTIFIER USES***

LUKENS NICKEL-CLAD STEEL

to avoid rust spots in paper

Lukens Nickel-Clad Steel provides here, at lower cost, all the advantages of solid nickel —an interior surface of nickel resistant to corrosion, thus assuring long life for this pulp selectifier and avoiding rust spots in the finished paper.

Paper-making machinery employs Lukens Clad Steels at many points, not only to protect quality of product, but also as a means of cutting costs. Original equipment usually costs less. Paper spoilage is reduced, cleaning of machinery is facilitated and upkeep work greatly reduced.

Each Lukens Clad Steel—Nickel-Clad, Stainless-Clad, Inconel-Clad or Monel-Clad —is a precision product controlled from assembly to finish, consisting of a layer of the corrosion-resistant metal permanently bonded to a steel backing plate. Standard claddings of 10% or 20% of total plate thickness suit most applications, but other percentages are available by special arrangement.

Lukens Clad Steels represent the most complete range available to industry. For additional information, write for Bulletins 338 and 255, Lukens Steel Company, 403 Lukens Building, Coatesville, Pennsylvania.

CLAD METAL STEEL

LUKENS

Nickel-Clad Stainless-Clad Inconel-Clad Monel-Clad STEELS

SOLID METAL ADVANTAGES WITH CLAD STEEL ECONOMY

Orr Felt Entertains Superintendents

PIQUA, Ohio — The second annual get-together of the Miami Valley Division of the American Pulp and Paper Mill Superintendents Association was held on April 22 at the plant of The Orr Felt & Blanket Company. Division Chairman Arthur F. Gardner (Champion Paper & Fibre Co., Hamilton, Ohio) presided over the sessions. Arthur H. Wilson, also of Champion, is Secretary-Treasurer.

Guests included Raymond F. Bennett, General Superintendent of Ecusta Paper Corporation, Pisgah Forest, N. C., National President of the Association; Messrs. Anderson, Carroll, and Wolf of Mac Sim Bar Paper Company, Otsego, Mich., who arrived by plane; Messrs. Barron and Grunwald of Consolidated Paper Company, Monroe, Mich., Messrs. Sherwood and Sutton of Sutherland Paper Company, Kalamazoo, Mich.

Business of the division disposed of, Chairman Gardner introduced Harold H. Burrows, Raybestos-Manhattan Company, who spoke on "Rubber and Rubber Covered Rolls."

The Reverend John Williamson, Pastor of the local St. James Episcopal Church, told of his experiences as chaplain in the late war.

Visitors who had not previously seen the Orr plant were guided through the textile mill. There they saw paper mill felts being made and treated by the Orr-Chem process. They also inspected the new, fully manned Orr laboratory which was installed for the further perfection of treated felts. Of particular interest were instruments and equipment employed to check abrasion and relaxation of felting.

By way of diversion, recreation, and sociability, the visitors enjoyed some healthy slicing and topping on the Piqua golf course; also a period of acquaintance renewal at the Backtenders' Club. Dinner was served in the Orr cafeteria at 6:30 o'clock in the evening.

Kimberly Foremen Hear Wallpaper Lecture

KIMBERLY, Wis.—About 70 members of the Foremen's club attended a dinner April 26 and heard A. R. Ellis, assistant chief mill manager of the pulp and paper division of Kimberly-Clark corporation, trace the history of the manufacture of wallpaper, and the corporation's part in it at the Atlas mill at Appleton. With exhibits, Ellis traced the creation of a new line of wall paper beginning with the artist's work through the matching of the painting for samples, and the final commercial runs for wholesalers.

Three new members were admited into the club. They are Robert Horne, Charles Hardy, and Claude Crosby. The club will help sponsor a Kimberly boy at the Badger Boys State at Ripon college. William Van Hout reported on the progres of the typing of blood for a blood donors' bank, which the club is sponsoring.

Waxed Paper Institute Plans June Meeting

CHICAGO—An industry-wide meeting of waxed paper manufacturers will be held at the Homestead, Hot Springs, Va., June 10 and 11. A. H. Noelke, secretary-treasurer of the Institute, has invited representatives of all waxed paper manufacturers to attend the two-day session to exchange ideas on mutual problems and questions. Wives of members have also been invited to attend.

In addition to the regular business session, the meeting will include a golf tournament, reception, and banquet. Arthur F. Briese, humorist, writer and public relations counselor, will address members, ladies and guests at the banquet, Thursday evening, June 10. His subject will be "Skulduggery at the Old Crossroads."

William P. Patterson of Specialty Papers Company, Dayton, Ohio, newly-elected chairman of the Executive Committee of the Institute, will preside at the business meeting on June 11 and will make the opening address.

Promotional plans for the 1948-49 fiscal year will be presented by Harold L. Bills, Saniwax Paper Company, Kalamazoo, Mich., chairman of the National Merchandising Committee, and by Howard H. Monk, Howard H. Monk & Associates, Rockford, Ill.

Other reports and panel discussions will include: Industrial Relations Program by Maynard M. Bartley, Rapinwax Paper Company, Minneapolis; Cost Accounting Proposal by George Lamb of the law firm of Kittelle and Lamb; and Ink Scanning Devices by Paul Pannier of the Waxed Paper Institute. There will also be a report on the expanded program of the Statistical Committee.

Michigan Superintendents Plan Field Day Program

KALAMAZOO—Golf, lawn games, and other amusements adapted to a shady porch are all being wrapped up in a program of sports in readiness for the annual field day of the Michigan division of the American Pulp and Paper Mill Superintendents Association. The scene is to be the Gull Lake Country Club; the date is July 20. Dinner will be served at 7:30 to be followed by a short annual meeting for the election of officers.

Chairman Paul Bartholomew, of Hawthorne Paper, has advanced his plans so far that they even provide for an oasis somewhere out on the golf course. "No mirage," he says, and he is echoed by his fellow committeemen Lester Smith of St. Regis and Roy Holden of Stowe-Woodward.

New England TAPPI to Meet at Swampscott

SWAMPSCOTT, Mass.—The New England Section of the Technical Association of the Pulp and Paper Industry will meet at the New Ocean House, on May 20-21. The theme of the meeting will be "Containers, Packaging and Performance Testing". Two sessions will be devoted to three speakers who will cover specification, sales potentialities of modern packaging, shipping conditions in ports of the world, U. S. Government requirements and performance vs. performance testing. There will be motion pictures and exhibits relating to those subjects.

On May 20th there will be a visit to the plant of the Monsanto Chemical Company at Everett, Mass. At this plant alum, sulphuric acid, alcohol, nitric acid and other chemicals are made. There will also be a visit to Monsanto's new research laboratory in which is housed process development, application research and of special interest, the pulp and paper application laboratory.

There will be a golf tournament on the sporty United Shoe Machinery Company course. A fine program of sailing, deep sea fishing, harbor cruises, and dancing, is being arranged. A large number of ladies are expected to attend.

The Ocean House is one of the finest in New England. It is located about twelve miles north of Boston on the Boston and Maine Railroad. The rates for the TAPPI convention start at $8.50 per day per person, American plan. Reservation should be made direct with the hotel.

Badger Mills Celebrates Safety Record

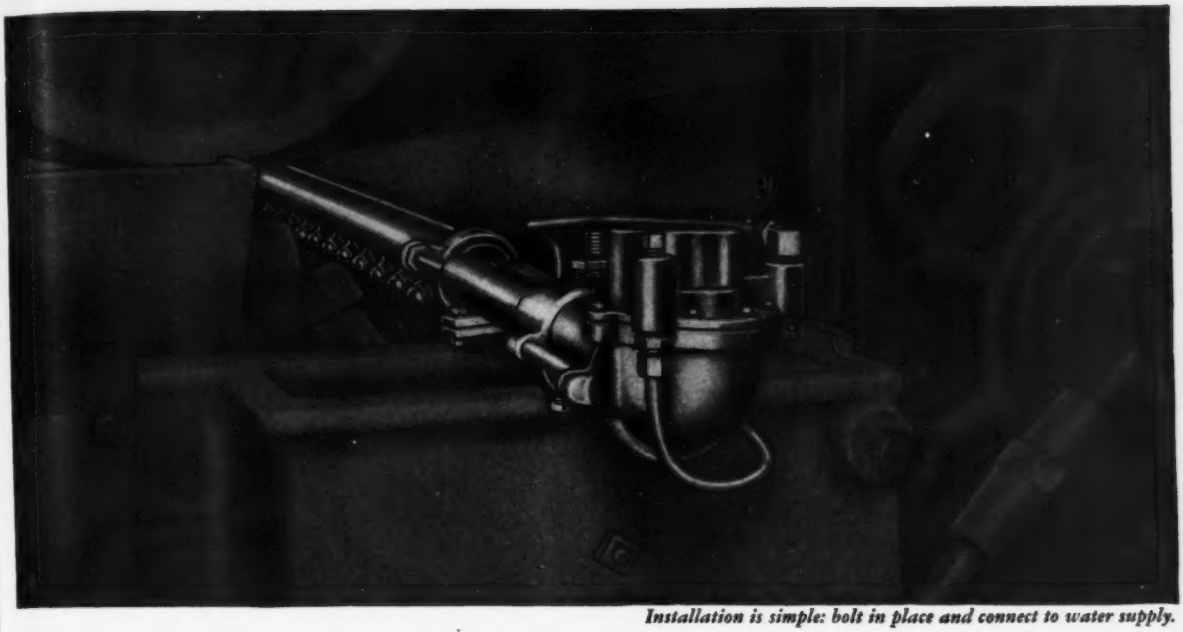
MARINETTE, Wis. — Badger Paper Mills, Inc. held its annual safety dinner April 24, with more than 300 persons in attendance. E. A. Meyer, president and general manager, discussed progress in promotion of plant safety and the accomplishments along that line during the last year.

Orville Skowlund received a certificate from the state motor vehicle department for five years of driving without an accident. He has driven eleven consecutive years without a chargeable accident.

Walter F. Adrian, general chairman; Robert L. Murwin, dinner chairman; Inez Brown, decorations; Otto Pottratz, gym arrangements, and A. M. Dohr, reception, were in charge of the safety dinner.

Forestry Alumni to Dine

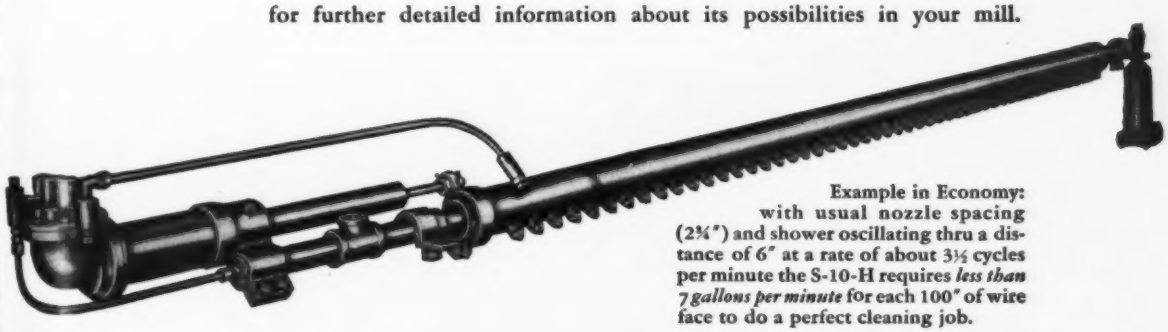
NEW YORK — The annual dinner of the New York State College of Forestry Alumni in the Metropolitan area will be held on Friday evening, May 21, 1948. The dinner which will be served promptly at 7 o'clock will be at Stouffer's Restaurant, 540 Fifth Avenue.



Installation is simple: bolt in place and connect to water supply.

THE *Broughton* S-10-H HYDRAULICALLY OSCILLATED SHOWER

This completely hydraulic shower is quickly adaptable to cylinder moulds, thickeners, save-alls, wires or felts. Designed for efficient and dependable operation, it does a perfect job of cleaning while at the same time reducing stock adulteration and saving tremendous quantities of water. In many leading mill installations throughout this country and abroad, water expenditures for cleaning have plummeted to offset the shower cost in an incredibly short time. We invite your inquiry for further detailed information about its possibilities in your mill.



Example in Economy: with usual nozzle spacing (2¾") and shower oscillating thru a distance of 6" at a rate of about 3½ cycles per minute the S-10-H requires *less than 7 gallons per minute* for each 100" of wire face to do a perfect cleaning job.

A. E. BROUGHTON & COMPANY

Glens Falls, New York

Moves to Conserve Farmington Water

WINDSOR, Conn. — The Farmington River Power Company is making a survey to use the water over again, perhaps twice, after it is released from the dam at the power station at Rainbow, to develop power and at the same time to provide a more adequate flow in the Farmington River.

Maurice H. Pease, president and general manager of the company, has sent Representatives Hazel Thrall Sullivan and Carlan H. Goslee a copy of a letter which he addressed to Atty. Hugh M. Alcorn, Sr., town attorney. Mrs. Sullivan and Mr. Goslee, who have been working to secure a more adequate flow of water in the Farmington River, referred the matter to Attorney Alcorn.

Mr. Pease says that the directors of the company are opposed to building five dams in the river as suggested by Richard Martin of the State Water Commission. Instead, they have voted to have a survey made concerning restoration of the dams at the Dunham Mills and Tunxis Mill sites, for power purposes. This, according to Mr. Pease, also would provide water in the river. It would also mean that the water the power company has agreed to release from its dam at Rainbow would not be wasted.

The letter concludes with the statement, "It is our intention to proceed immediately with the investigation authorized. If we conclude that it is possible to proceed with the development it will require a large investment, and we think that all concerned should feel that we are doing our share, and that we are making an effort to cooperate with the town of Windsor. Such a spirit has, I think, been manifest by the letting down of water during the night and over week-ends at a considerable financial loss to this company."

Hawley Pulp Stock Called for Redemption

PORTLAND, Ore.—The United States National Bank of Portland, acting as escrow holder under terms of the recent sale of the Hawley Pulp & Paper Company, Oregon City, Ore., has mailed letters to second preferred holders, advising them that their stock may be presented for redemption. The call price is $102.50 a share plus $1.50 dividend which normally would be paid on July 1.

The bank also began mailing checks to common stock shareholders who deposited their stock in accordance with the purchase agreement with the Publishers Paper Company and Blyth & Company, Inc. The common stock is being paid for at the rate of $34.37 a share, representing cash purchase price of $35.25 less commission and costs of 88 cents a share. Total sale price was $39 per share, and the remaining $3.75, representing the deferred payment, is payable by the purchasers on or before March 15, 1956.

Of the 200,000 common shares outstanding owned by 660 stockholders, 188,072 were deposited with the bank under the purchase agreement.

Champion Nets $1.6 Million For Twelve Weeks

HAMILTON, Ohio—Net income of the Champion Paper & Fibre Company, and subsidiary companies, transferred to earned surplus for the 12 weeks ended Feb. 1, 1948, amounted to $1,590,767, equal to $1.35 per share on common stock. This was after appropriations of $225,000 for possible losses from revaluation of inventories; $150,000 for possible extraordinary loss from abandonment of property, and $150,000 for excess cost of property replacements. Before making these appropriations, net income for the quarter amounted to $2,115,767, or $1.83 a common share. This compared with earnings of $286,469, or 34 cents a share, in the like quarter a year previous.

For the three quarters ended February 1, net income amounted to $6,300,889, and the amount remaining for transfer to surplus was $4,600,889, after total appropriations of $1,700,000. Net income was equal to $5.51 a share on common stock, before appropriations, and $3.86 a share in the amount transferred to surplus. It compared with consolidated net income of $1,479,821, or $1.86 a common share, for comparative three quarters a year earlier.

Champion Declares on Common and Preferred

HAMILTON, Ohio—Directors of the Champion Paper & Fibre Company have declared a dividend of 50 cents per share on common stock, payable June 10 to holders of record May 17. The previous quarterly payment was 25 cents. Dividends on the common issue amounted to $1.25 a share in 1947. The regular quarterly dividend of $1.25½ per share was declared for payment July 1 of record June 10.

Gilbert Paper Awarded Brand Names Certificate

MENASHA, Wis.—The Gilbert Paper company recently received the Brand Names Foundation's "certificate of public service" given for fifty or more consecutive years of service to the American consumer.

A. C. Gilbert, president of the company, received the award on behalf of the firm, with Donald B. Douglas, vice-president of the Quaker Oots Company and vice-chairman of the board of Brand Names Foundation, making the presentation.

Gilbert Paper company was honored for its brand name "Columbian Bond" writing paper which was introduced by the company in 1890.

Congress Considers Pollution Control

WASHINGTON,—A Water Pollution Control Act, S. 418, was favorably reported to the House by the House Committee on Public Works, last week. The House bill makes a number of substantial changes from the version considered by the Senate.

The bill as reported to the House emphasizes the primary responsibilities and rights of the States in water pollution control, but provides for cooperation of the Surgeon General of the United States with State authorities in development of programs. States are permitted to enter into interstate compacts for control. Actual enforcement is through notification by the Surgeon General to the State authority or agency concerned, that an unlawful pollution has been found in the area. State and Surgeon General are authorized to cooperate in steps taken thereafter to abate the pollution.

Among major changes in the House bill, Federal loans are limited to state, municipal and interstate agencies for treatment works. No loans or grants are authorized to private industries for this purpose. The language of the bill more definitely confines application of the law to interstate streams. Research in water pollution control is authorized, and a laboratory is authorized to be established at Cincinnati, Ohio, in furtherance of research.

Kimberly Clark Celebrates Safety Performances

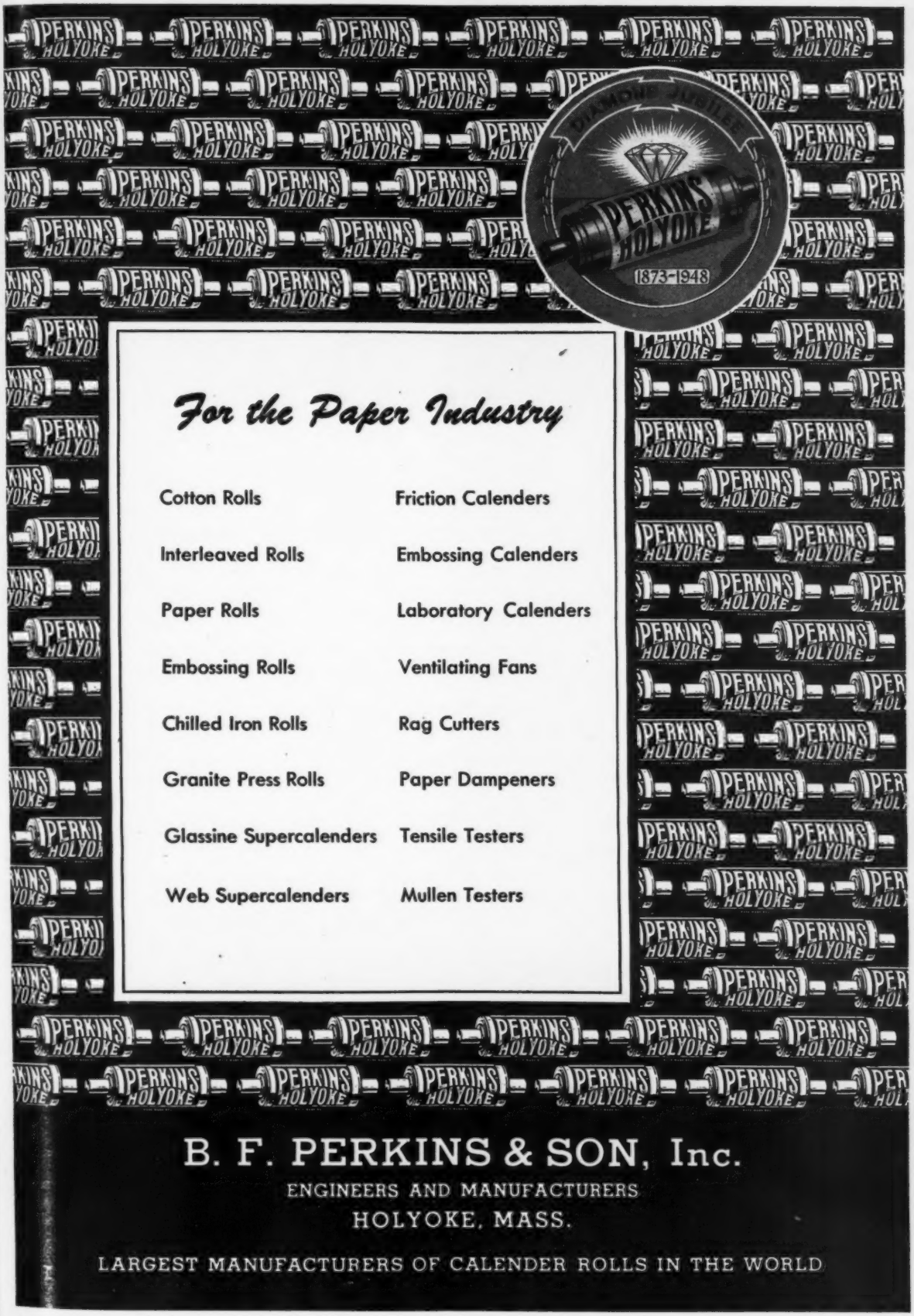
NEENAH, Wis.—Three safety achievements were celebrated last week at two mills of Kimberly-Clark Corporation. Employes of the technical department of the Lakeview mill were honored at a dinner April 22 for having 17 years without a lost-time accident, equivalent to 370,000 man-hours of work without an accident. Speakers included Robert Stilling, technical department superintendent; John Wollage, Lakeview mill manager, and Art Homblette, Lakeview safety manager.

Records of two departments at Badger-Globe mill were cited. The engineering department, which has 90 employes, recently completed two years without a lost-time accident, while the manufacturing department, with 150 employes, completed 500 days without a lost-time accident.

Hammermill Dock Crew Gets 11-Cent Raise

ERIE, Pa. — Pulpwood employes at Hammermill dock on the bay front will start this year's wood season with an 11-cents-an-hour pay increase. This was made known in a joint statement by Local 12955, District 50, UMWA, and Hammermill Paper Company.

The new wage agreement, which runs for one year, also includes holiday and vacation policy changes.


PERKINS HOLYOKE
DIAMOND JUBILEE
PERKINS HOLYOKE
1873-1948
For the Paper Industry
Cotton Rolls
Interleaved Rolls
Paper Rolls
Embossing Rolls
Chilled Iron Rolls
Granite Press Rolls
Glassine Supercalenders
Web Supercalenders
Friction Calenders
Embossing Calenders
Laboratory Calenders
Ventilating Fans
Rag Cutters
Paper Dampeners
Tensile Testers
Mullen Testers
B. F. PERKINS & SON, Inc.
ENGINEERS AND MANUFACTURERS
HOLYOKE, MASS.
LARGEST MANUFACTURERS OF CALENDER ROLLS IN THE WORLD

West Virginia Plans Retirement Fund

WASHINGTON, D. C.—A pension plan for hourly-paid employees of the West Virginia Pulp & Paper Company will become effective on June 1, following final discussions between representatives of the company and the United Paperworkers of America-CIO at the Hotel Raleigh.

The retirement plan, as made public by the union, covers over 7,000 employees of the company's six paper mills and is a voluntary, contributory plan which, it is estimated, will bring average retirement benefits in the long-run to about $90 a month, including Social Security benefits.

The union, which participated in lengthy discussions of the plan with the company in November and April, has informed the company that several features of the plan do not meet with its approval.

Employee contributions to the plan will be two percent of gross earnings up to $57.69 per week and two and one-half percent of earnings in excess of that amount. The company will contribute close to five million dollars to cover past service if all eligible employees join the plan and in that case its annual contributions will be $410,000.

Employees will be eligible to join the plan following their thirtieth birthday, provided they have worked for the company for one year. They will become eligible for retirement benefits at 65 years of age, though provision is made for retirement with benefits after reaching the age of fifty-five. Employees who are now over 60 years of age will not reach their normal retirement age until their 70th birthday.

During the discussion and in a letter to the company, union representatives stated that the pension plan doesn't give adequate protection to employees who are now in the older age group. The union also protested that the plan is to be "unilaterally instituted by the company and to be unilaterally administered by it." Union representation on the plan's administrative board was requested during the discussions.

Pension plan discussions between UPA-CIO representatives and management began last November. The discussions resulted from an agreement signed by the union and the company on August 20, 1947, stating that the company would consider a pension plan during the contract year.

Representatives of the United Paperworkers of America-CIO, assisted by Murray Latimer, industrial pension expert and former research director of the President's Advisory Board on the Guaranteed Annual Wage, rejected the company's first draft proposal, presented in November.

The plan which will now go into effect is a substantial improvement over the original proposal, the union stated.

THOMAS J. O'ROURKE

Joins Aldine staff

"The union deserves credit for improvements in the plan," James W. Towsen, company vice-president, told UPA-CIO representatives.

The union, in a letter to Mr. Towsen, stated that "this plan is not the product of collective bargaining. If the company institutes this plan, the union in no way waives any of its rights as the collective bargaining agent to protest the plan and its administration."

A recent ruling by the National Labor Relations Board, in the Inland Steel Company case, held that pension plans were subject to collective bargaining.

The CIO Paperworkers are the collective bargaining agents for the company's three paper mills at Covington, Va., Luke, Md., and Williamsburg, Pa. The employees at the Charleston, S. C., mill are represented by several AFL organizations and the Mechanicsville, N. Y., mill is organized by District 50 of the Mine Workers. The mill at Tyrone, Pa., is not organized.

The pension plan will be installed at all six of the company's establishments.

Dean Garratt Heads Forest Research Group

NEW HAVEN, Conn.—George A. Garratt, Dean of the Yale School of Forestry, and Manufacturers' Association Professor of Lumbering, has been elected president of the Forest Products Research Society. Mr. Garratt was a member of a group of government agency research personnel and educators who organized the Society in February, 1947, and served as its first vice-president. He was honored with the presidency at the second national annual meeting held in Chicago recently.

O'Rourke Joins Aldine As Industrial Specialist

NEW YORK—Harry E. Gould, president, Aldine Paper Company, has appointed Thomas J. O'Rourke as assistant to Walter Cusack, vice-president and manager of the industrial and technical papers division. Mr. O'Rourke has been associated with Standard Brands, Inc. for the past fourteen years in executive procurement and food packaging capacities.

Mr. O'Rourke, Mr. Gould said, is considered an authority on food packaging, and he emphasized Mr. O'Rourke's especial fitness to serve the needs of Aldine Paper Company's clientele among food packers. "Mr. O'Rourke's background as buyer and packaging authority is unique in the industry. He brings to our customers a wealth of experience and a close relationship with the food packers' paper and processing problems that can be exploited to mutual advantage."

New Borden Division Takes Over Casein

NEW YORK—The Borden Company has formed a Chemical Division to take over the activities of Borden's Casein Company of America and Durite Plastics Divisions. William F. Leicester, who has headed the company's casein and plastics operations, will serve as president of the Chemical Division. He is a Borden vice-president. Mr. Leicester said the establishment of the Chemical Division signals the beginning of a long-range program for the further development of industrial adhesives and binders of both synthetic and natural types, and marks the broadening of Borden's activities in the industrial plastics field.

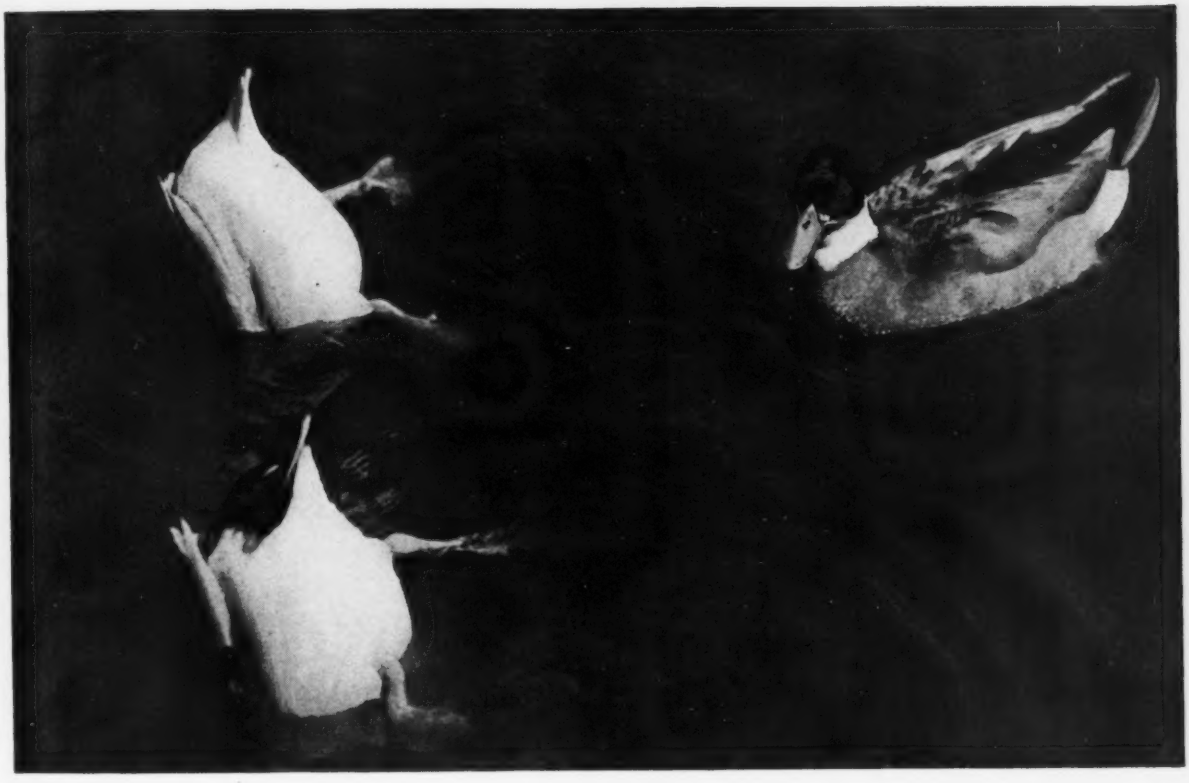
There are no changes in personnel; and under the well-known Casco and Durite trademarks operations will continue from headquarters at 350 Madison Avenue, New York City, with administrative offices at Philadelphia and Seattle.

Wisconsin Reservoirs Raising Their Levels

WAUSAU, Wis.—Reservoirs along the Wisconsin river were at nearly 59 per cent of capacity on April 25, with total storage in the system reaching 10,009 million cubic feet as compared to 10,569 million cubic feet, on the same date last year, and as compared to 14,135 million cubic feet in 1945, which was a high year for the April 25 reading in the last decade.

The EauPleine reservoir gained 67 million cubic feet during the week, and contained 3,331 million cubic feet on April 25. Total gains in the reservoir system during the week were 856 million cubic feet.

HIDING POWER



Not *partial* but *total* hiding power is desirable in fine coated paper. And Wyandotte Precipitated Calcium Carbonate lends a high degree of opacity to the coated sheet.

This carefully processed chemical has every quality to be desired in a paper coating pigment. It is smooth, uniform and free from grit and abrasiveness. Satisfied users like its ready and easy dispersion in water . . . its printability . . . the high whiteness and brightness it provides.

Because it is made of pure ingredients, scientifically processed, Wyandotte Precipitated Calcium Carbonate has properties no natural product has.

If your objective is fine coated paper, it will pay you to look into the advantages of this truly *fine* product. Why not write for information today?

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WYANDOTTE, MICHIGAN • OFFICES IN PRINCIPAL CITIES

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Soda Ash • Caustic Soda • Bicarbonate of Soda • Calcium Carbonate • Calcium Chloride • Chlorine • Hydrogen • Dry Ice • Glycols
Ethylene Dichloride • Propylene Dichloride • Chloroethers • Aromatic Sulfonic Acid Derivatives • Other Organic and Inorganic Chemicals

IMPORTS

NEW YORK IMPORTS

WEEK ENDING MAY 1, 1948

SUMMARY

Newsprint	14,425 rolls
Printing Paper	780 rolls
Coated Paper	108 cs.
Paperhangings	13 pkgs.
Photo Paper	148 cs.
Wrapping Paper	2 cs.
Bristol Boards	3 cs.
Drawing Paper	1 cs.
Recorder Paper	1 cs.
Miscellaneous Paper	293 rolls, 1 cs.

NEWSPRINT

News Syndicate Co., Hellas, Baie Comeau, 6284 rolls.

Pagel Horton & Co., Inc., Lyngenfjord, Oslo, 572 rolls.

R. A. Olsen, Inc., Donpago, Donnacona, 385 rolls.

Malmar Paper Co., Mount Davis, Genoa, 233 rolls.

N. Y. Journal American, Markland, Liverpool, N. S., 517 rolls.

N. Y. Herald Tribune, Markland Liverpool, N. S., 1827 rolls.

N. Y. World Telegram, Markland, Liverpool, N. S., 442 rolls.

Brooklyn Eagle, Markland, Liverpool, N. S., 691 rolls.

Washington Post (Alexandria, Va.), Markland, Liverpool, N. S., 2729 rolls.

Alexandria Gazette (Alexandria, Va.), Markland, Liverpool, N. S., 33 rolls.

Washington Daily News (Alexandria, Va.), Markland, Liverpool, N. S., 332 rolls.

R. A. Olsen, Inc., Newscarrier, Donnacona, 380 rolls.

PRINTING PAPER

Times Publishing Co. (Erie, Pa.), Kim, Rouen, 124 rolls.

(———), Mormacpenn, Abo / Turku, 656 rolls.

COATED PAPER

F. P. Gaskell & Co., American Clipper, Glasgow, 41 cs. (for cigarette tips).

F. P. Gaskell & Co., Eucadia, Glasgow, 67 cs. (for cigarette tips).

PAPERHANGINGS

W. H. S. Lloyd & Co., American Leader, London, 13 pkgs.

PHOTO PAPER

Lep Transport, Inc., American Leader, London, 97 cs.

American Express Co., American Leader, London, 97 cs.

WRAPPING PAPER

All Transport, Inc., Exceller, Genoa, 2 cs.

BRISTOL BOARDS

Halperin Shipping Co., Red Jacket, London, 3 cs.

DRAWING PAPER

Nydegger Transportation Co., Veendam, Rotterdam, 1 cs.

RECORDER PAPER

American Express Co., Red Jacket, London, 1 cs.

MISCELLANEOUS PAPER

Price & Pierce, Ltd., Markland, Liverpool, N. S., 293 rolls.

Bulkley Dunton Co., Stavelot, Antwerp, 1 cs. (samples).

RAGS, BAGGINGS, ETC.

Railway Supply & Manufacturing Co., Mormacyork, Rio de Janeiro, 110 bls. cotton waste.

New England Waste Co., Naboland, Santos, 115 bls. cotton waste pickers.

(———), Mohamed Ali El-Kebir, Alexandria, 57 bls. old light hessian bagging, 73 bls. scrap bagging.

Continental Bank Trust Co., Mohamed Ali El-Kebir, Alexandria, 72 bls. scrap bagging.

(———), Mohamed Ali El-Kebir, Alexandria, 48 bls. old pieces, 164 bls. old light hessian bagging, 114 bls. old bagging.

Harris Goldman Co., Exemplar, Leghorn, 184 bls. cotton rags.

J. P. Fleisig, Exemplar, Leghorn, 124 bls. dark cotton rags.

Chase National Bank, Exemplar, Genoa, 20 bls. old jute bagging.

Manufacturers Trust Co., Exemplar, Genoa, 316 bls. old waste bagging.

Herman Adlerstein, Exemplar, Genoa, 2 bls. jute rags.

M. O. Schimmel, Mount Davis, Bombay, 200 bls. cotton waste.

Camden Fibre Mills, Mount Davis, Bombay, 50 bls. cotton waste.

New England Waste Co., Mount Davis, Bombay, 225 bls. cotton waste.

Padawer Trading Co., Mount Davis, Bombay, 100 bls. cotton waste.

Leigh Textile Co., Mount Davis, Bombay, 100 bls. cotton waste.

Brandwein Mazur Co., Mount Davis, Bombay, 192 bls. cotton waste.

E. J. Keller Co., Mount Davis, Bombay, 200 bls. old jute rags.

National City Bank, Mount Davis, Naples, 61 bls. rags.

Chase National Bank, Mount Davis, Genoa, 124 bls. old bagging rags.

J. P. Fleisig, Mount Davis, Genoa, 142 bls. dark cotton rags.

Chase National Bank, Attleboro Victory, Antwerp, 79 bls. old waste bagging.

E. J. Keller Co., Inc., Ames Victory, Antwerp, 127 bls. paper stock.

(———), Exceller, Leghorn, 44 bls. light cotton rags, 48 bls. old blue cotton rags.

Bankers Trust Co., Exceller, Leghorn, 184 bls. dark cotton rags.

Harris Goldman Co., Exceller, Leghorn, 309 bls. rags.

National City Bank, Exceller, Genoa, 162 bls. rags.

Chase National Bank, Exceller, Genoa, 123 bls. bagging.

Darmstadt Scott & Courtney, Exceller, Genoa, 135 bls. bagging.

Royal Manufacturing Co., Creighton Victory, Antwerp, 64 bls. cotton waste.

E. J. Keller Co., Inc., Eastern Guide, Algiers, 220 bls. old cotton waste.

Atlas Waste Manufacturing Co., Agwiking, Havana, 17 bls. cotton waste.

OLD ROPE

Continental Bank Trust Co., Mohamed Ali El-Kebir, Alexandria, 70 bls.

CASEIN

American Cyanamid Co., Mormacyork, Buenos Aires, 1500 bags.

Balfour Guthrie & Co., Mormacyork, Buenos Aires, 560 bags (ground lactic).

(———), Industria, Buenos Aires, 40 bags (ground lactic).

American Cyanamid Co., Beacon Grange, Buenos Aires, 1000 bags.

CHINA CLAY

English China Clays Sales Corp., Manchester Commerce, Avonmouth, 168 bags.

GLUESTOCK, ETC.

Murwal, Inc., Mormacyork, Buenos Aires, 235 bags hideglue.

Transatlantic Animal By-Products Co., Mormacowl, Rio Grande, 1000 bags boneglue.

Continex, Inc., West Linn Victory, Antwerp, 100 bags boneglue.

Continex, Inc., Ames Victory, Antwerp, 147 bags boneglue.

WOODPULP

Price & Pierce, Ltd., Markland, Liverpool, N. S., 2278 bls. unbleached sulphite pulp.

BOSTON IMPORTS

WEEK ENDING MAY 1, 1948

Green Textile Associates, Mount Davis, Bombay, 300 bls. cotton waste.

S. L. Ayres, Mount Davis, Bombay, 100 bls. cotton waste.

Herman Adlerstein, Exceller, Genoa, 249 bls. dark cotton rags.

PHILADELPHIA IMPORTS

WEEK ENDING MAY 1, 1948

Herman Adlerstein, Exemplar, Genoa, 174 bls. brown cotton rags, 55 bls. colored cotton rags.

F. Weber, Exceller, Genoa, 6 cs. drawing paper.

United Clay Mines Corp., Manchester Commerce, Avonmouth, 42 tons 14 cwt. china clay.

NORFOLK IMPORTS

WEEK ENDING MAY 1, 1948

J. P. Fleisig, Ames Victory, Antwerp, 147 bls. rags.

We make time

A vital factor in the paper and woodpulp industry!

The organization of Elof Hansson maintains offices in:

Gothenburg
London
Sao Paolo
Rio De Janiero
Buenos Aires
Mexico City
Bombay
Shanghai

and representatives in all key cities throughout the world!

Our intimate world-wide affiliations—branch offices and personal representatives—gear this international organization to the making of "time". Time, and timeliness, as the industry well knows, spell profits in the distributing and marketing of paper and woodpulp.

As importers and exporters of these materials, Elof Hansson Inc. has the broad facilities that bring buyer and seller together quickly regardless of where they are located. That makes time—and profits—for both.

o

ELOF HANSSON INC.

220 EAST 42ND STREET NEW YORK 17, N. Y.

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, May 5, 1948.

Discussing the outlook for essential packaging materials during the 17th Annual Packaging Exposition held in Cleveland last week, Lee R. Forker, General Purchasing Agent, Quaker State Oil Company, said that there is no shortage of paper shipping containers at the present time, that new paper mills and linerboard manufacturing improvements have increased the available supply. "This situation, coupled with the decreased demand of many consumer items packed in paper, has increased competition to a marked degree," he said.

"Folding cartons, paper bags, tubes, drums and cans continue to be available with improved quality and without any recent reported price changes," Mr. Forker stated. "It is important here to mention improved packing, sealing and handling equipment recently designed, although deliveries of such equipment are often six to nine months. Even with substantial freight cost increases and one substantial paper price increase since the first of the year, paper container prices are firm, tempered with a few decreases.

"It has been recently announced that expanded national defense program and its probable government controls will cause dislocations and reduced production in the paper and pulp industry due to shortage of manpower. Predictions are difficult since government plans are still in the formative stage. It is believed that supply and demand of paper and paperboard will not be interfered with to as large a degree as experienced during the war," Mr. Forker stated.

Many manufacturers as well as distributors and consumers in various parts of the United States report a general easing up in the demand situation for many grades and items, a situation which undoubtedly reflects the great increases in tonnage output of such grades and items since the end of the war. Furthermore, current production in 1948 discloses that for paper and board of all grades the domestic production is running well ahead of a year ago, reports the U. S. Department of Commerce.

"One of the fields where supplies remain substantially short of meeting prevailing needs is in kraft paper and kraft paper products such as bags — a situation which seems prevalent in practically every section of the United States," the Department of Commerce finds, at the same time reporting increased production of coarse papers during January and February of over 8 percent. Unbleached kraft wrapping showed a 15 percent increase during that period, unbleached kraft bags 11.5 percent, shipping sacks 14 percent, unbleached kraft converting 8 percent. Meanwhile increased uses for multiwall paper bags requires greater output from the 51 million in 1947 to an estimated 108 million this year.

Newest inroads of paper bags into the cotton bag field is in the 220 million yard flour bag market where new laws prohibit the reuse of bags for flour. Paper bags for this purpose now sell at 11 cents, compared with approximately three times that amount for cotton bags. Promotional work is being directed also into the 300 million yard feed bag market, while cotton bag manufacturers have inaugurated an $180,000 advertising campaign to hold their traditional markets. Multi-wall bag resale also is being publicized in this battle of paper versus cotton, even while cotton bags become glamorized with gay prints for later use as dresses and home furnishings.

For the most part, converted paper items such as facial tissue, napkins and towels are readily available, the Department finds, although toilet paper continues to be reported scarce in some areas. As a result of some improvements to old machines, production of old-style toilet tissue will show gradual increase, although no great increases are expected in this direction. Facial types of toilet tissue can be expected to come into the market in increasing quantities as diversion from boxed facial, now in good supply, takes place.

Because of the apparent evening up of the supply-demand relationship for some grades of paper and converted product items, some customers are becoming increasingly exacting as to qualities and specifications.

Waste Paper

Collections for the week ended April 24 were higher than the preceding week's, with consumption 5 percent higher. The net result was that the few hundred tons put into inventory the previous week were consumed last week. For the first 17 weeks of the year, collections have been 3.1 percent higher than those of 1947, and 13 percent greater than 1946, the Eastern Conservation Committee reports.

With vast supplies of all grades of waste paper flowing in, there are indications that mill receipts during April will not only exceed last April's 712,000 tons but may approach last October's all time high of 735,000 tons. Mill purchases for April run about 3.5 percent ahead of last April, 11.45 percent over 1946, and 15.8 percent over 1945.

In some areas, collections are bogging down of their own weight, Director Baker of E.C.C. reports, especially in sections distant from consuming mills where transportation charges are vital. With another freight rate hike by the Interstate Commerce Commission, mills are looking more closely than ever for local sources of supply. Dealers are attempting to meet this situation with improved quality of pack, and mill buyers report that most dealers are supplying much better quality.

Receipts of old containers failed to meet mill requirements. Corrugated consumption is abreast of the supply with demand sustained and prices firm. For folded news and mixed paper, the market is reported as extremely dull in all areas with mills buying conservatively in the face of an easing of demand for paperboard products. Prices nevertheless are quotably unchanged as dealers endeavor to stabilize prices in order to assure a steady flow of collections. Colored ledgers are softened by heavy supply, white found ready sale. Book likewise is plentiful. Higher grades continue in persistent demand.

Cottons

New cuttings come forward in limited quantity because of retarded production in the apparel trade, but with mills manifesting little interest in purchasing any grades but unbleached muslins, the supply is equal to the demand and the market dull. A supply of white cuttings found no purchasers as mills draw on inventories for production needs and await lower prices. Certain mills are said to be out of the market for new supplies of cut back production. Heavy imports of old foreign rags reached the market this week. Domestic rags come forward in limited quantity but sufficient to meet the restricted demand. Prices for new cuttings and old rags are firm.

Index

The index of general business activity for the week ended April 24 inclined to 146.3 from 143.6 in the previous week, compared with 146.4 for the corresponding week of 1947. The index of paperboard production was 188.4 percent, compared with 183.5 for the preceding week, and with 178.4 for the corresponding week of 1947.

Paper production for the week ended April 24 was estimated at 104.1 percent, compared with 100.4 for the preceding week, with 105.3 for the corresponding week of 1947, with 100.6 for 1946, and with 87.0 for the corresponding week of 1945. (This does not include mills producing newsprint exclusively.) Tonnage production was 12.0 percent greater than last year's although because of a 13.3 percent increase in 1948 capacity this year's production ratio is lower.

Paperboard production for the week ended April 24 was 102.0 percent of capacity, compared with 100.0 for the preceding week, with 100.0 for the corresponding week of 1947, with 100.6 for 1946, and with 99.0 for the corresponding week of 1945.

METHOCEL

is back in carload quantities!

Dow is expanding production facilities to meet the growing demand of industry for Methocel, (Dow Methylcellulose). This versatile product is readily available for prompt shipment.

Yielding neutral solutions in a wide range of viscosities, Methocel has proved successful in many varied applications—as a ceramic binder, as a thickener in pharmaceuticals and cosmetics—as a surface sizing and coating for paper, leather and textiles—as a bodying and stabilizing agent in water and emulsion paints, as a mold release agent and latex thickener.

Prepare now to re-evaluate this interesting and useful chemical in your laboratory. You'll find that Methocel's outstanding characteristics will help to improve the quality of your product. Detailed information is available on request.

METHOCEL ADVANTAGES

1. Methocel is a uniform, synthetic chemical product.
2. Methocel is completely soluble in water and contains no dirt or foreign material.
3. Methocel solutions ordinarily do not require preservatives.
4. Methocel solutions are neutral.
5. Methocel solutions remain clear and colorless over a wide pH range.
6. Methocel is odorless, tasteless, harmless.
7. Methocel is compatible to an unusual degree with a wide variety of modifying agents such as alcohols, wetting agents, plasticizers, and water soluble resins.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Cleveland • Detroit
Chicago • St. Louis • Houston • San Francisco • Los Angeles • Seattle
Dow Chemical of Canada, Limited, Toronto, Canada

DOW

CHEMICALS INDISPENSABLE TO INDUSTRY AND AGRICULTURE

PRICES

The quotations given below are indicative of trends in an open market. At the moment they can be of little more value for while some volume business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

Paper

(Delivered New York)

Standard News, per ton—
Rolls, contract .... $93.00/$96.00
Sheets 108.00/109.00

Kraft—per cwt.—Carload Quantities Zone A Deld. 40 lb. base wgt.

Superstandard Wrapping	$9.00/	—
No. 1 Wrapping	7.25/	8.00
Standard Wrapping	6.50/	—
Standard Bag	6.50/	—

Tissues—Per Ream 24x36 (480) 11 lb. Zone 1.

Wh. No. 1 Frd.	$1.84/	$2.00
Wh. No. 1 M. G.	1.94/	2.00
Wh. No. 1½	1.60/	—
Wh. No. 2	1.75/	—
Kraft Anti-Tar	1.65/	—
Kraft Unbl.	1.85/	—
Manila No. 2	1.62/	—
Shred. Wh. No. 1 cwt.	1.10/	1.50

Toilet—Per Case of 100 rolls -1 M Sheets.

Unbleached	$8.50/	$10.00
Bleached	8.50/	10.00

Paper Towels—Per Case of 3750—Zone 1.

Wh. Jr. M'tif'd 9¼x9½	$5.15	
Br. Sr. M'tif'd 10x12	3.60	
Br. Jr. M'tif'd 9½x9¾	3.10	
Br. Jr. Sgl. fold 10x10¾	3.15	

Manila—per cwt.—C-l. f.a.

No. 1 Jute Tag	$14.50/	—
Reg. Jute Manila	13.25/	$15.50
No. 1 Manila	9.75/	—
5 lb. Manila	10.75/	11.25

Boards, per ton—

Plain News	$92.50/	—
Filled News	94.00/	—
Plain Chip	90.00/	—
Sgl. Mla. L-d. Chip*	100.00/	102.50
White Pat. coated*	120.00/	—
Kraft Liners 42 lb.	100.00/	—
Kraft Corr. .009	105.00/	—
Binders Boards	126.00/	—

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1:

Rag Content Bonds and Ledgers—White, 16 lb.

Bonds, per cwt.

	Carton	4 C't'n	Ton
100% Rag Ext. No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Ledgers, per cwt.

100% Rag Ext. No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Sulphite Bonds and Ledgers—White, 16 lbs.

Bonds, per cwt.

No. 1	$21.25	$19.25	$18.50
No. 2	20.25	18.30	17.55
No. 4	19.25	17.55	16.85

Ledgers, per cwt.

No. 1	$21.75	$19.65	$18.85
No. 2	20.75	18.75	18.05
No. 4	20.00	18.10	17.35

Free Sheet Book Papers—White, Cased Paper

(Per cwt.)	Case	Ton
No. 1 Glossy Coated	20.40	$19.50
No. 2 Glossy Coated	19.15	18.30
No. 3 Glossy Coated	18.40	17.60

(Per cwt.)	Case	Ton
No. 1 Antique (Watermarked)	$15.90	$15.15
No. 2 Offset	15.15 to 17.90	14.60 to 17.10
A Grade E. F.	14.90	14.25
A Grade S. & S. C.	15.40	14.65
B Grade E. F.	13.90	13.30
B Grade S. C.	14.40	13.70

Wood Pulp

Domestic mill contract prices delievered with varying freight allowances.

	Per Short ADT
Groundwood	$80.00/$81.00
Unbleached Sulphite	124.00/ —
Bleached Sulphite	125.00/135.00
Bleached Soda	130.00/ —
Bleached Sulphate	175.00/185.00
Unbleached Sulphate Northern	125.00/155.00
Unbleached Sulphate Southern	130.00/145.00

Canadian Quotations

Prices delivered with varying freight allowances unless otherwise specified:

	Per Short ADT
Reg. No. Kraft	125.00/ —
Unbleached Sulphite	125.00/126.00
Bleached Sulphite	125.00/135.00
Glassine Unbleached Sulphite (no freight allowance)	120.00/ —
Bleached Soda	130.00/ —
Groundwood	80.00/ 85.00
Siderums Pulping News	80.00/ —
Hardwood and Specialty Grades	Nominal

Swedish Quotations

On dock, Atlantic Ports

Bleached Kraft	185.00/195.00
Bleached Sulphite	185.00/195.00
Unbleached Sulphite	155.00/175.00
Unbleached Kraft	147.50/165.00

Finnish Quotations

On dock, Atlantic Ports

	Per Short ADT
Bleached Sulphite	$187.50/ —
Unbleached Sulphite	155.00/157.00
Unbleached Sulphate	147.50/ —

New Domestic Cotton Cuttings

(F.O.B. Shipping Point Plus Dealer's Commision)

White Shirt	$12.00/$12.50
Unbleached Muslin	12.00/ 12.50
Light Silesias	9.00/ 9.25
White Back Blue Overalls	9.00/ 9.50
Blue Overalls	8.00/ 8.25
Fancy Shirt	6.00/ 6.25
Light Percales	8.50/ 8.75
Light Prints	7.50/ 7.75
No. 1 Washables	5.00/ 5.25
Bleachable Khaki	7.50/ 8.00
Unbleachable Khaki	6.50/ 7.00
Cottonades	5.50/ 5.75

Old Domestic Cotton Rags

(F.O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs.	
No. 1 Whites Repacked	$5.50/	$6.00
No. 1 Whites Miscellaneous	4.50/	5.00
No. 2 Whites Repacked	3.50/	3.75
No. 2 Whites Miscellaneous	3.00/	3.50
Blue Overalls	3.75/	4.00
Thirds and Blues Repacked	3.25/	3.50
No. 1 Roofing Rags	1.90/	2.00
No. 2 Roofing Rags	1.75/	1.85
No. 3 Jute Bagging	1.60/	1.75
No. 4 Brussels and hard back carpets	1.65/	1.75
No. 5A Roofing Rags	1.65/	1.75

New Foreign Cotton Cuttings

(Prices to Mill, F.O.B. Dock, N.Y.)

	Per 100 lbs.	
New Dark Cuttings	$5.50/	$5.75
New Mixed Cuttings	6.25/	6.50
Light Silesias	9.25/	9.50
Light Flannelettes	9.25/	9.50
New White Cuttings	12.00/	13.00
New Unbleached Cuttings	12.25/	13.00
Fancy Shirt Cuttings	6.50/	7.00
Light Prints	7.75/	8.00
Bleachable Khaki, No. 1	7.00/	7.50
Unbl. Khaki, No. 1	6.25/	6.75

Old Foreign Rags

(Prices to Mill, f.o.b. dock, N.Y.)

	Per 100 lbs.	
No. 1 White Linens	$14.00/	$16.00
No. 2 White Linens	12.00/	13.00
No. 3 White Linens	8.00/	9.00
No. 4 White Linens	8.00/	9.00
No. 1 White Cottons	8.00/	10.00
No. 2 White Cottons	7.00/	8.00
No. 3 White Cottons	6.00/	6.50
No. 4 White Cottons	4.00/	4.50
Extra Light Prints	6.50/	7.00
Old Light Prints	4.50/	5.00
Med. Light Prints	3.75/	4.25
Dutch Blue Cottons	5.25/	5.50
Checks and Blues	4.00/	4.25
Linsey Garments	2.50/	2.65
Dark Cottons, European	2.40/	2.50
Dark Cottons, Egyptian	3.25/	3.50
Old Shopperies	2.20/	2.30
New Shopperies	2.40/	2.50

Bagging

(Prices to Mill, f.o.b. N.Y.)

	Per 100 lbs.	
Foreign Gunny, No. 1	$6.50/	$7.00
Domestic Gunny, No. 1	6.75/	7.25
Heavy Wool Tares	6.25/	6.50
Heavy Wool Tares	6.00/	6.25
No. 1 Scrap Bagging	5.50/	5.75
Roofing Bagging	1.75/	2.00
Foreign Manila Rope	6.00/	6.75
Domestic Manila Rope	6.50/	6.75
Jute Strings	5.00/	5.25
No. 1 Sisal Strings	5.25/	5.50
Mixed Strings	1.75/	2.50

Waste Paper

Base Prices to Mills for Average Packings

(Dollars Per Ton)

F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	$155.00/	$165.00
No. 1 Hard White Envelope Cuts	145.00/	155.00
No. 1 Hard White Shavings, unruled	145.00/	155.00
No. 1 Hard White Shavings, ruled	110.00/	130.00
Soft White Shavings, one cut	145.00/	155.00
No. 1 Soft White Shavings	135.00/	145.00
Soft White Shavings, Misc.	125.00/	135.00
No. 1 Fly Leaf Shavings	45.00/	—
No. 1 Groundwood Fly Leaf Shavings	35.00/	—
N. 1 Heavy Books & Magazines	25.00/	26.00
Mixed Books	15.00/	18.00
No. 1 White Ledger	75.00/	80.00
Manila Tab. Cards	95.00/	100.00
New Manila Envelope Cuttings, one cut	100.00/	110.00
New Manila Envelope Cuttings	65.00/	75.00
Extra Manilas	25.00/	30.00
Mixed Kraft, Env. & Rag Cuttings	75.00/	85.00
Kraft Envelope Cuttings	110.00/	—
Triple Sorted, No. 1 Brown Soft Kraft	65.00/	75.00
New Kraft Corrugated Cuttings	70.00/	75.00
No. 1 Assorted Old Kraft	50.00/	55.00
New Jute Corrugated Cuttings	27.00/	—
Old 100% Kraft Corrugated Containers	35.00/	40.00
No. 1 News	13.00/	14.00
No. 1 Mixed Papers	10.00/	11.00
Box Board Cuttings	— /	—
White Blank News	75.00/	85.00
Overissue News	16.00/	17.00
Old Corrugated	20.00/	22.00
Mill Wrappers	22.00/	24.00

Twines

All Prices Nominal, F.o.b. Mill

(Soft Fiber)

Coarse Polished—

India	.33¾/	.35
Fine India	.38¾/	.42½

Fine Polished

Unpolished—

Paper Makers	.28¾/	.30¾
Tube Rope	.29 /	.31½
Wrapping	.32 /	.35¾
Cotton	.63¾/	.66¾

(Hard Fiber)

Mex. Sisal	.21 /	.27
Manila (Reprocessed)	.30 /	.32

(American Hemp)

Polished Hemp	.36¾/	.60
Unpolished	.32¾/	.54

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings—

New White No. 1	.11 / .12
New White No. 2	nominal
Light Silesias	.07½/ .08
Black Silesias, soft	.06½/ .07
New Unbleached	.10½/ .11¼
Washable Prints	.06½/ .07
Washable No. 1	.05 / .05½
Blue Overall	.07½/ .08

Cotons—According to grades—

Washable Shredding	.03½/ .04
Fancy Percales	.06¾/ .07¼
New Black Soft	nominal

Khaki Cuttings—

Unbleachable Cotton Cuttings	.06 / .06½
Bleachable Cotton Cuttings	.07 / .07½
Men's Corduroy	.05½/ .06
Ladies' Corduroy	.05 / .05½
Cottonades	.05½/ .06

Domestic Rags (Old)

(F.O.B. Eastern Shipping Point)

White No. 1 —Repacked	4.50 / 5.00
Mixed White	4.00 / 4.25
White No. 2—Repacked	3.50 / 3.75

Thirds and Blues—

Miscellaneous	2.25 / 2.50
Repacked	2.75 / 3.00

Roofing Stock—

Foreign No. 1	nominal
Domestic No. 1	1.85 / 1.90
Domestic No. 2	1.75 / 1.80
Roofing Bagging	1.65 / 1.70
Old Manila Rope	6.25 / 6.50

Bagging

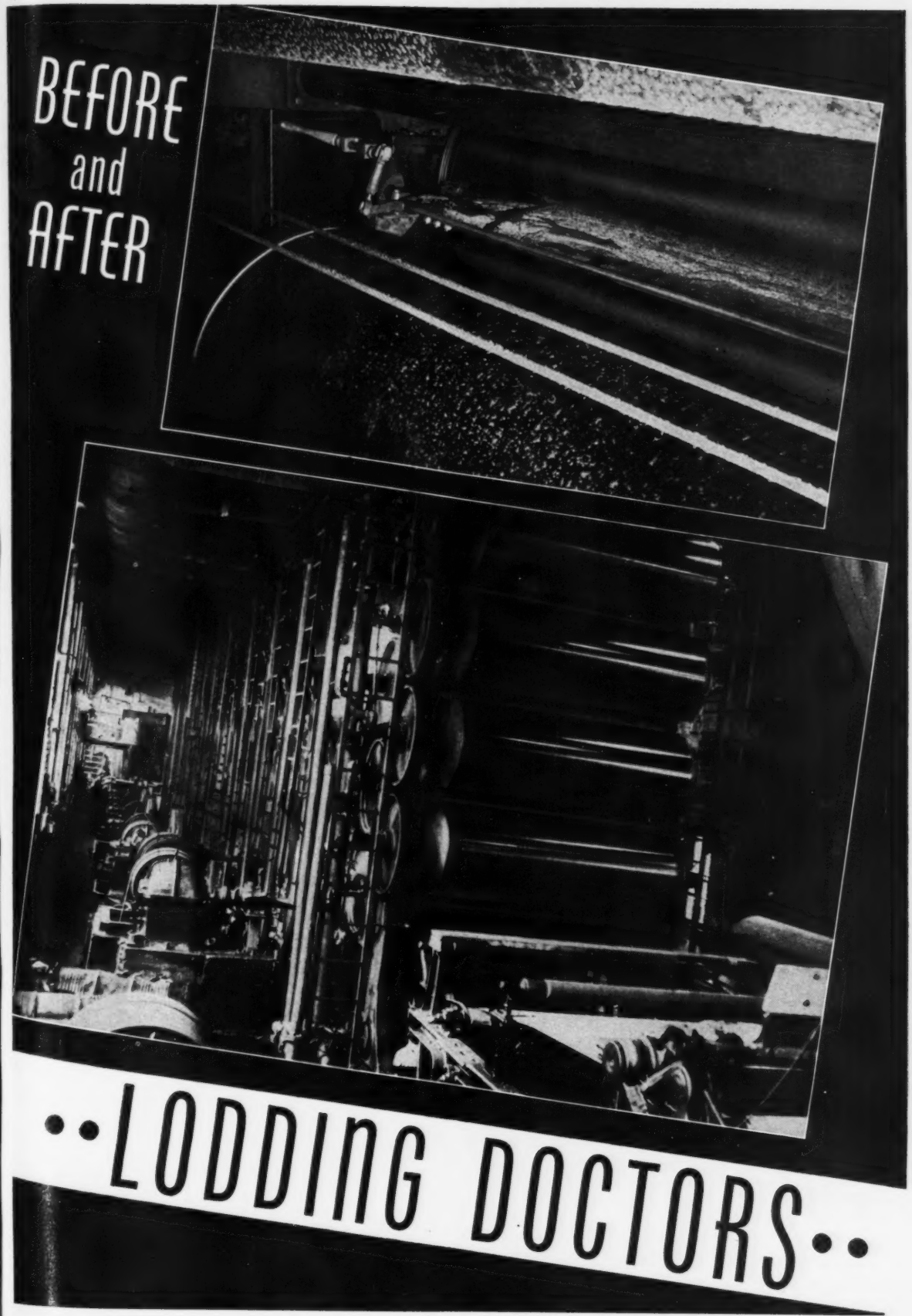
(F.O.B. Eastern Shipping Point)

Gunny No. 1—

Foreign	nominal
Domestic	4.75 / 5.25
No. 1 Clean Bright—Sisal Strings	.04½/ .05
No. 2 Clean Bright—Sisal Strings	.03½/ .04
Sisal Jute	.02¾/ .03

Scrap—

No. 1	5.00 / 5.50
No. 2	2.50 / 3.00


BEFORE
and
AFTER
••LODDING DOCTORS••

Wool Tares, heavy ..	4.75	/ 5.00
New Burlap Cuttings	6.00	/ 6.50

Old Papers

(F. o. b. Phila.)
Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00/	$115.00
No. 1 Hard White Shavings, unruled .	100.00/	—
Soft White Shavings, One cut	90.00/	95.00
White Blank News .	75.00/	—
Soft White Shavings	80.00/	—
No. 1 White Ledger	85.00/	90.00
Ledger, Colored	70.00/	72.00
No. 1 Heavy Books & Magazines	24.00/	26.00
Overissue Magazines	nominal	
New Manila Envelope Cuttings	80.00/	—
No. 1 Assorted Old Kraft	60.00/	65.00
No. 1 Mixed Paper .	11.00/	12.00
Box Board Cuttings .	10.00/	11.00
Kraft Corrugated Cuttings	90.00/	100.00
Old Corrugated	24.00/	26.00
Overissue News	20.00/	22.00
No. 1 News	13.00/	15.00

BOSTON

Old Papers

(F. o. b. Boston)
Mill Prices, Baled

No. 1 Hard White Shavings, unruled .	6.25	/ 6.75
No. 1 Hard White Shavings, ruled ..	6.00	/ 6.50
Soft White Shavings, Misc.	6.00	/ 6.25
No. 1 Fly Leaf Shavings	—	/ —
No. 2 Fly Leaf Shavings	4.25	/ —
No. 1 Groundwood Fly Leaf Shavings	1.75	/ 2.00
No. 2 Groundwood Fly Leaf Shavings	1.50	/ 1.75
Mixed Colored Shavings	2.00	/ 2.25
New Manila Envelope Cuts, one cut	4.50	/ 4.75
Hard White Envelope Cuts, one cut	7.00	/ —
Triple Sorted No. 1 Brown Soft Kraft	3.75	/ 4.00
Mixed Kraft Env. & Bag Cuttings	4.00	/ 4.25
Kraft Envelope Cuttings	5.00	/ 5.50
No. 1 Heavy Books & Magazines	1.75	/ —
New Manila Envelope Cuttings, one cut .	—	/ —
New Manila Envelope Cutings	4.00	/ 4.25
White Tabulating Cards	5.00	/ —
Groundwood Tabulating Cards	1.50	/ 1.75
White Blank News .	2.25	/ 2.50
No. 1 Assorted Old Kraft	3.50	/ 4.00
No. 1 Mixed Paper .	.60	/ .65
Overissue News	.90	/ 1.00
No. 1 News	.70	/ .75
Box Board Cuttings .	.60	/ .70
New Corrugated Cuttings, Kraft	2.75	/ 3.00
Old Kraft Corrugated Containers ..	2.00	/ 2.25
Old Corrugated Containers	1.25	/ 1.30
Jute Corrugated Cuttings	1.07½/	—
Paper Strings	2.00	/ 2.25

Bagging

(F. o. b. Boston)

Gunny Bagging—		
Foreign	—	/ 4.75
Domestic	—	/ 4.75
Sisal Rope No. 1 ..	6.00	/ —
Sisal Rope, No. 2 ..	5.50	/ —
Mixed Rope	5.25	/ —
Mixed Strings	2.00	/ 2.50
Transmision Rope—		
Foreign	nominal	
Domestic	3.00	/ 3.50
Manila Rope—		
Foreign	nominal	
Domestic	6.25	/ —
Soft Jute Rope	5.00	/ 5.25
Juts Carpet Threads	6.00	/ —
Bleachery Burlap	8.50	/ 9.00
Scrap Burlap—		
Foreign	—	/ 4.75
Domestic	—	/ 4.87½
South America	5.25	/ —
Wool Tares		
Foreign	4.75	/ —
Domestic	4.75	/ —
Asst. Wool Pouches .	5.00	/ 5.25
New Zealand Wool Pouches	5.25	/ 5.50
New Burlap Cuttings	6.00	/ 6.50
Heavy Baling Bagging	5.25	/ 5.75
Paper Mill Bagging .	3.50	/ 3.75
No. 1 Roofing Bagging	1.75	/ —

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—		
New Light Prints .	.07½/	—
Fancy Percales ..	.08	/ —
New White No. 1 .	.11	/ .11¾
New Light Flannelettes	.08	/ .08½
Canton Flannels, Bleached	.10	/ .11
Underwear Cutters, Bleached	.11½/	—
Underwear Cutters, Unbleached	.11	/ .12
Silesias No. 1	.08	/ .08½
New Black Silesias .	.04½/	—
Red Cotton Cuttings	.05	/ —
Blue Overalls	—	/ .08½
Soft Unbleached	.11	/ .12
Blue Cheviots	.08½/	.09
Fancy	.06	/ —
Washable	.06	/ —
Khaki Cuttings	.06½/	.07½
Corduroy	.03½/	—
Men's Corduroy	.04½/	—
Ladies' Corduroy	.04	/ —
Khaki Canvas	—	/ .06
B. V. D. Cuttings	.11½/	—

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—		
Repacked	3.80	/ —
Miscellaneous	3.20	/ —
White No. 2—		
Miscellaneous	2.65	/ —
Twos and Blues, Repacked	2.20	/ —
Old Blue Overalls ..	2.25	/ 2.50
Thirds and Blues, Repacked	2.20	/ —
Miscellaneous	1.80	/ —
Black Stockings	3.50	/ 4.00
Roofing Stock—		
No. 1	1.85	/ —
No. 2	1.75	/ —
No. 3	1.65	/ —
No. 4	1.65	/ —
No. 5, Quality A.	1.35	/ —
Quality B.	1.20	/ —
Quality C.	.95	/ —
Old Manila Rope	6.00	/ —

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)
Mill Prices, Baled

Shavings—		
No. 1 Hard White Envelope Cuts, one cut	$150.00/	—
No. 1 Hard White Shavings, runruled	140.00/	—
No. 1 Soft White Shavings	120.00/	—
No. 1 White Ledger .	85.00/	—
No. 1 Heavy Books & Magazines	35.00/	—
White Blank News .	80.00/	85.00
Mixed Kraft Env. & Bag Cuttings	90.00/	110.00
No. 1 Assorted Old Kraft	35.00/	—
Overissue News	24.00/	—
No. 1 News	21.00/	—
No. 1 Mixed Paper .	13.00/	—
Old Corrugated	26.00/	—
Mill Wrappers	17.00/	—

MARKETS

BLANC FIXE—Continued heavy demand. Prices firm. Pulp is currently quoted at $85 in bags, car lots at works, 6 cents per lb., l.c.l., deld.; by-product $75 per ton, car lots at works, 6 cents per lb., l.c.l., deld.

BLEACHING POWDER — Supply adequate. Delivery good. Prices range from $3.75 to $4 per 100 pound drums, l.c.l. works.

CASEIN—Domestic production improving though well behind that of a year ago. Prices strong. Heavy foreign inquiry keeps import market firm. Current prices on processed acid precipitated casein at 33 to 35 cents per pound for domestic grades and 29½ to 31 cents for imported grades, f.o.b. shipping point.

CAUSTIC SODA—Labor strike has worsened supply. Demand heavy. Solid caustic is reported at $2.85 per cwt.; flaked and ground is quoted at $3.25 per cwt. in 400 pound drums, $3.75 to $4 per cwt. in 100 pound drums—car lots at works; liquid 50 percent in tank cars at $2.25 per cwt.; liquid 73 percent in tank cars at $2.35 per cwt., at works.

CHINA CLAY—Domestic grades and imported in good supply. Filled is $9 to $11.50 per ton, car lots; coating clay is $14 to $22. Imported clay quotation, short tons, $16 to $35, export warehouse.

CHLORINE—Supply extremely tight. Production cut back by labor condition. Currently quoted at $2.25 per cwt. in single unit tank cars, at $2.55 to $3.75 per cwt., in multi-unit tank cars, f.o.b. works.

ROSIN — Supply good. Domestic buying improving. Export sale awaits ECA action. Gum rosin in drums per 100 pounds net in car lots, f.o.b. Savannah: B, $6.60; G, $6.97; H, I, K, $7.15. Wood rosin per 100 pounds net, car lots, f.o.b. Savannah: B, $4.60 to $5.10; FF, $5.60 to $6.10.

ROSIN SIZE — Seventy percent, gum and pale wood grades. Supply ample. Demand good. Tank cars $5.75 to $6, f.o.b. southern shipping point.

SALT CAKE—Demand continues ahead of supply with slight improvement in shipments. Production under contract. Domestic salt cake is quoted at $25 to $28.

SODA ASH — Supply worsened by strike. Deliveires behind schedule. Current prices, car lots, per 100 pounds; in bulk, $1.10; in paper bags, $1.30; and in barrels, $1.70.

SODIUM BICARBONATE—Strong demand with supply somewhat tighter. Reported as $1.85 per cwt. paper bags, carload lots.

STARCH—Demand good. Supply plentiful. Active export inquiry. Pearl grade quoted at $6.96 per 100 pounds; powdered starch at $7.07 per 100 pounds; car lots, New York.

SULPHATE OF ALUMINA—Prices unchanged. Supply steady. The commercial grades are quoted at from $1.15 to $1.30 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is $2 per 100 pounds in bags, car lots, at works.

SULPHUR—Prices unchanged. Supplies ample. Annual contracts are quoted at $16 to $18 per long ton, f.o.b. mines; the price f.o.b. at Gulf ports is $17.50 to $19.50 per long ton.

TALC — No change in domestic market. Demand far in excess of supply. Domestic grades are currently quoted at $23 per ton in paper sacks, f.o.b. mills; Canadian at $35 and up per ton. All prices in car lots.

TITANIUM DIOXIDE—Market unchanged. Extremely tight supply. No early easing seen in situation. Shipments on allocation. Anastase 17½c lb. carload lots, 18-18½c l.c.l., rutile, 19½c lb. carload lots, 20-20½ l.c.l.; 50-lb. bags, f.o.b. plant, minimum freight allowance.

OBITUARY

Mark Wilder Bray

MADISON, Wis.—Mark Wilder Bray, chemist in charge of alkaline pulping investigations in the pulp and paper division of the U. S. Forest Products Laboratory here, died at his home of coronary thrombosis on April 24. He had not been in good health for some time, but his death came as a result of over exertion two weeks earlier. He was 58 years old.

Mr. Bray was a graduate of Lawrence College in Appleton, Wis., his home town. His Master's degree was obtained at the University of Minnesota. Further graduate studies at Cornell University were interrupted by his service at Picatinny Arsenal, Dover, N. J., during World War I. In 1920 he obtained a transfer from the War Department to the Department of Agriculture and was assigned to pulp and paper research at the Forest Products Laboratory.

Mr. Bray's original detail at the Laboratory was the chemical analysis of pulps. Many of the methods of analysis which he developed at that time have since become standard in the pulp and paper industry. His assignment to alkaline pulping research followed and his activity in this field is attested by his numerous articles and reports on the chemistry of the alkaline processes and the relation of wood properties to the properties of sulfate pulp.

He was a member of the Technical Association of the Pulp and Paper Industry committee on alkaline pulping for many years and currently was a member of the executive committee of the TAPPI Lake States Section.

Mr. Bray is survived by his wife, Pearl Aslakson Bray; a daughter, Mrs. Robert Wood of St. Paul, Minn.; and two grandchildren.

Funeral services were conducted in Madison at Luther Memorial Church, of which Mr. Bray was an active member, and burial took place in Minneapolis, where Masonic services were conducted at the grave.

Gerald A. Judge

HOLYOKE, Mass.—Gerald A. Judge of South Hadley Falls, president and treasurer of the Eureka Blank Book Company, here, died April 25 at Providence Hospital after a short illness.

Prominent in the affairs of the town of South Hadley, Mr. Judge served on the Board of Selectmen, and was, at the time of his death, chairman of the town's Finance Committee.

After his graduation from Amherst College in 1920, he became associated with the Eureka Blank Book Company, and in 1929 was elected treasurer of the firm. He assumed the additional duties of president following the death of his brother, Lawrence C. Judge, last October.

MATERIAL HANDLING *News*

Here's **BIG NEWS!**

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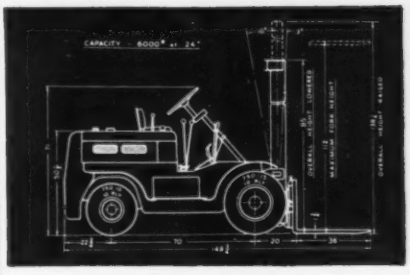

a pneumatic-tired fork truck of 6000 pounds lift capacity, for the BIG jobs of handling the BIG, heavier loads under toughest, roughest conditions —a machine whose BIG-ness is matched by its BIG potential usefulness to industry.

Does material handling in your business involve carrying heavy loads over rough, uneven, slippery surfaces, indoors or out?

HEAVYWEIGHT CHAMPION

Here's the answer—Clark's YARDLIFT "60," for handling 6000-pound loads on pneumatic tires. This heavy duty machine completes Clark's pneumatic tired "team," developed during 1947—with the YARDLIFT "40" and the YARDLIFT "20," of 4000-lb. and 2000-lb. capacities respectively. Rugged, nimble, steady, these machines revolutionized and simplified many difficult handling operations, with sharp reductions of accidents.

DESIGNED FOR SAFETY

The YARDLIFT "60" has all the sound and practical features so conclusively proved by the performance of the YARDLIFT "40" and the YARDLIFT "20." Safety is of utmost importance in this field of handling; and the machine's two-wheel steering axle and dual-wheel drive axle with wheels widely spaced, provides maximum security. The pivoted steering axle mounting, a Clark development, enables the machine to carry its load evenly and safely while the tires follow smoothly the ups and downs of the ground surface. A special steering-gear ratio makes for easier operation; and the driver has a comfortable air-cushioned seat, easily adjustable and placed for good visibility.

That your business may enjoy these advantages, talk things over with a Clark field engineer, a man trained to survey your operations and to make unbiased recommendations as to the equipment that will serve you most economically. CONSULT CLARK.

CLARK ELECTRIC AND GAS POWERED **FORK TRUCKS** AND INDUSTRIAL TOWING TRACTORS

CLARK EQUIPMENT COMPANY, TRUCTRACTOR DIVISION, BATTLE CREEK 58, MICH.
REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

Powell River Aims At Increased Output

(Continued from page 15)

contains a substantial percentage of fir and cedar. This problem is a complex one and cannot be solved by the pulp industry alone.

"In conjunction with these barkers, a chipper which chips an entire log was installed. These installations have decreased the footage of logs used per ton of product by approximately twelve percent. It is obvious that, in addition to dollar savings, these installations extend the life of our forest resources.

"In our groundwood pulp mill we installed a refining system which saves material previously wasted. This equipment, and other minor improvements, have materially increased production in our groundwood division.

"In our sulphite process we completed the installation of an additional digester, primarily for increased requirements for the newsprint machine. Also, our technical staff has been able to work out changes which have increased the output of our sulphite pulp for sale by approximately 10 tons per day.

"Our seven newsprint machines operated at a high degree of efficiency all year and without serious interruption. Our daily production averaged 4 tons per day more than in 1946.

"We have been working on a fibre conservation program through certain improvements on the machines and, as a result, during 1947 we were able to recover 580 tons of product formerly rejected.

"Logging operations were uninterrupted during 1947. Our subsidiary logging companies produced 131 million feet of logs, the cost of which was increased approximately twenty percent over the previous year. Improved market conditions offset the increased costs which resulted in a satisfactory profit being made by our logging companies. Approximately $250,000 was spent for the purchase of new logging equipment which will result in better efficiency in the future. Log production per man day decreased five percent as compared to 1946. Some improvement in the woods labor situation was noted although the industry as a whole is still suffering from the lack of experienced key men. Labor relations in the industry improved during the year. We are making a determined effort in our own companies to further improve these relations.

"Our timber reserves were increased by the purchase of approximately one billion feet of standing timber.

"Our program for harvesting forest waste as a means of conserving our timber reserves was further developed. Subsequent to the installation of the small hydraulic log barker at the mill, we processed in excess of 2½ million feet of salvage wood. We hope to increase these salvage operations during 1948. Today the cost of harvesting this type of wood is excessive compared to normal logs but by further improvements in handling methods, we feel that these excessive costs can be brought into line.

"We are exerting every effort to get our new No. 8 newsprint machine into production during July. To meet this schedule has required extraordinary expenditures in order to expedite delivery and erection of equipment. We feel that these expenditures are justified, in that each day we can accelerate the start-up of this machine additional revenue will accrue to the company and will help to meet the unprecedented demand for newsprint on this coast. It might interest you to know that this machine will cost approximately $2.7 million, whereas No. 7, which is the same size and was installed in 1931, cost $1 million.

"Work on an entirely new process of producing sulphite pulp is nearing completion and will substantially increase the newsgrade sulphite pulp produced per thousand feet of logs. We hope that this increase will be in excess of thirty percent which will result in a reduction in our manufacturing costs and further conserve our timber resources to the extent of approximately seven million feet per year."

Vertical Type

Ingersoll-Rand Class VGV vertical stock pumps are particularly adapted to situations where the suction conditions and location would not be favorable for horizontal pumps and where installation space is at a premium.

The pump casing is arranged so that the unit may be dismantled without disturbing the discharge piping.

It is possible to install this type of pump in a pit and have the motor safely above any normal high-water level.

These, and many other refinements of design, are completely covered in Ingersoll-Rand's bulletin No. 7022. Write for it or call an I-R engineer for further details.

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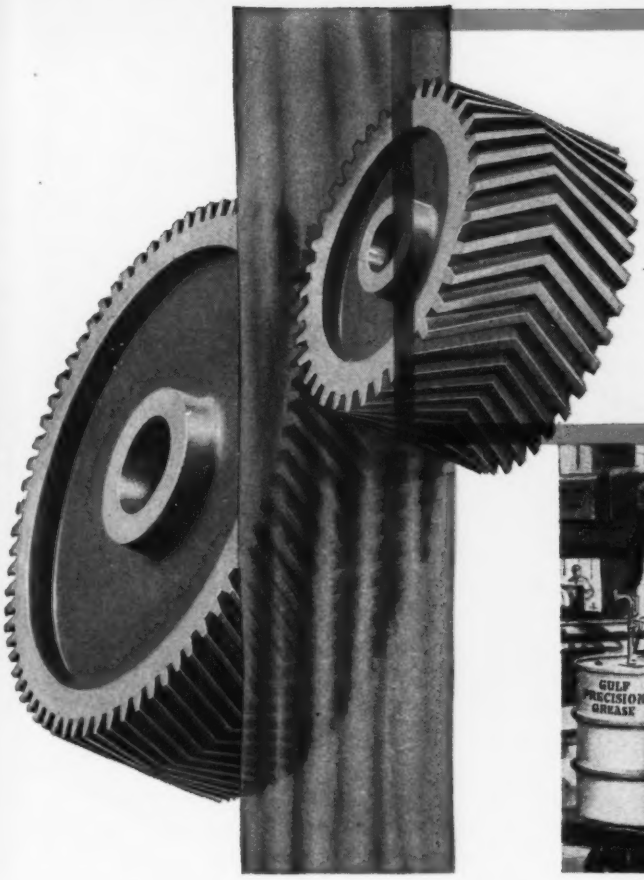

How much does the best lubrication cost?

"Nothing," say many plants. "It's more than paid for by savings in maintenance costs."

THIS statement has real meaning when the best oils are selected and properly applied. "It has been real economy for us to invest in Gulf quality lubricants," says the Superintendent of a large aircraft engine plant. "With better lubrication, we have been able to maintain a higher rate of production and at the same time make sizable savings in maintenance costs. These benefits more than pay the entire bill for the better oils we are using."

As a part of your continuing effort to reduce costs and improve production, ask a Gulf Lubrication Engineer to assist you in installing improved lubrication. In his broad experience, he has found literally dozens of ways to save money and increase efficiency through the proper selection and application of better oils and greases.

This kind of lubrication service has a real dollar and cents value to you. Write, wire, or phone your nearest Gulf office today.

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GULF INDUSTRIAL LUBRICATION

Look to Gulf for Quality Lubricants
Expert Lubrication Engineering Service

Superintendents Head For New Orleans

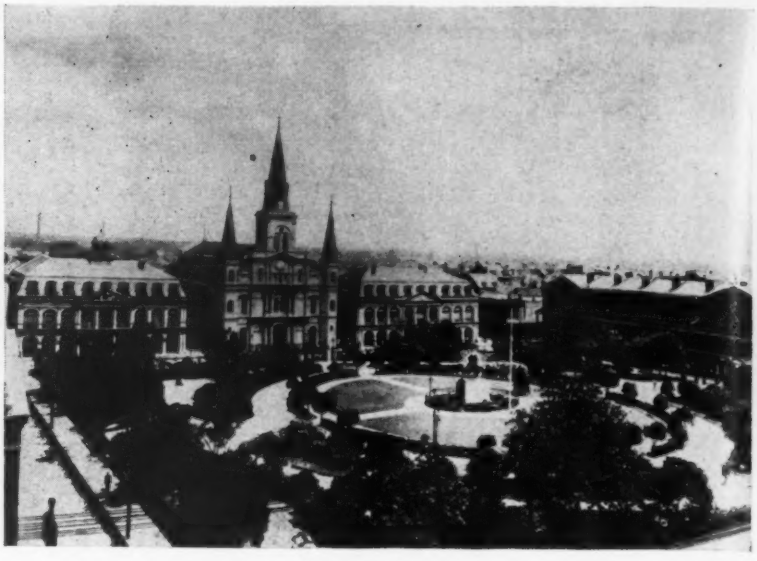
(Continued from page 28)

trict, however, did so in an entirely different manner. Their homes, huge affairs with rooms whose ceilings were 16 to 18 feet from the highly polished cypress floors, were set in large garden plots, in some cases encompassing an entire square, and around their property they built fine iron picket fences on which grew beautiful vinery. Built on a grand scale, their homes showed more of the Greek influence, especially those built in decades before the Civil War, than of the French and Spanish which was characteristic of the picturesque French Quarter.

The modern city, with its wide streets and avenues, its spacious residences, its unsurpassed parks, its miles of docks, its great industrial plants, its fine shops and excellent restaurants, is a source of interest that, in a way, matches the charm of the older aspects of the town, especially as the sharp contrast of the two seems to heighten the attractiveness of each. New Orleans is extremely fortunate that it has both the old and the new, for a place in which the old predominates gives off an appearance of decay, of lassitude and lack of a proper feeling for progress on the part of the inhabitants; and one in which the new has all the ascendancy, in America, at least, appears immature, standardized, has no individuality of its own. New Orleans has a tempered, seasoned appearance that holds a peculiar appeal for the visitor.

Modern New Orleans is in many ways as interesting as the old. There are few things more fascinating than a drive along the miles of docks and wharves where one can see the lifeblood of the city, the port, second greatest in the country, the basis of the city's prosperity. Many millions of dollars of commerce move over the sides of the ships that come to New Orleans from all the ports of the world—cotton, coffee, sugar, bananas, raw materials and innumerable other commodities—and it is handled with the most modern machinery, the intricate operations of which are highly interesting to watch. The port and harbor improvements are valued at over $200,000,000 and include the world's largest cotton warehouse, coffee and banana terminals, and the country's second Foreign Trade Zone.

New Orleans is almost bisected by Canal Street, the widest and most beautiful business thoroughfare in the world. Three and a half miles in length the sixteen blocks that run through the business district, both sidewalks and neutral ground, are paved with terrazo marble, and the street is lined with tall, artistic light standards each bearing three pear-shaped globes that give an extremely efficient street illumination system. Canal Street is a street of retail and department stores as well as theatres and hotels.



JACKSON SQUARE

The Place d'Armes (now known as Jackson Square) had its beginning when New Orleans was founded in 1718 by Bienville. Buildings, left to right, CABILDO, erected in 1795 and the scene of the transfer of Louisiana from Spain to France and from France to the United States in 1803; ST. LOUIS CATHEDRAL, built in 1794 on the site of Louisiana's first church; PRESBYTERE, used originally by the Cathedral priests; PONTABALBA APARTMENT, one of the two rows of brick buildings; oldest in this country, erected by the Baroness Pontalba. In the foreground is JACKSON SQUARE where in 1769 the flag of Spain displaced that of France. In the center of the square is the Jackson Monument, designed by Clark Mills and unveiled in 1856.

Halifax Paper Improvements Progressing Satisfactorily

ROANOKE RAPIDS, N. C.—Installation of new equipment at the Halifax Paper Company plant here is progressing satisfactorily, according to K. F. Adams, resident manager.

"Operation of the new chemical recovery unit is expected to begin either in February or March of next year," Mr. Adams said.

Last November the mill announced plans for an addition costing $1,500,000 and a few days ago obtained two permits totaling $1,925,385. These included work to be done on the pulp mill at an estimated cost of $599,585 and another for the construction of the recovery building at an estimated cost of $1,325,800.

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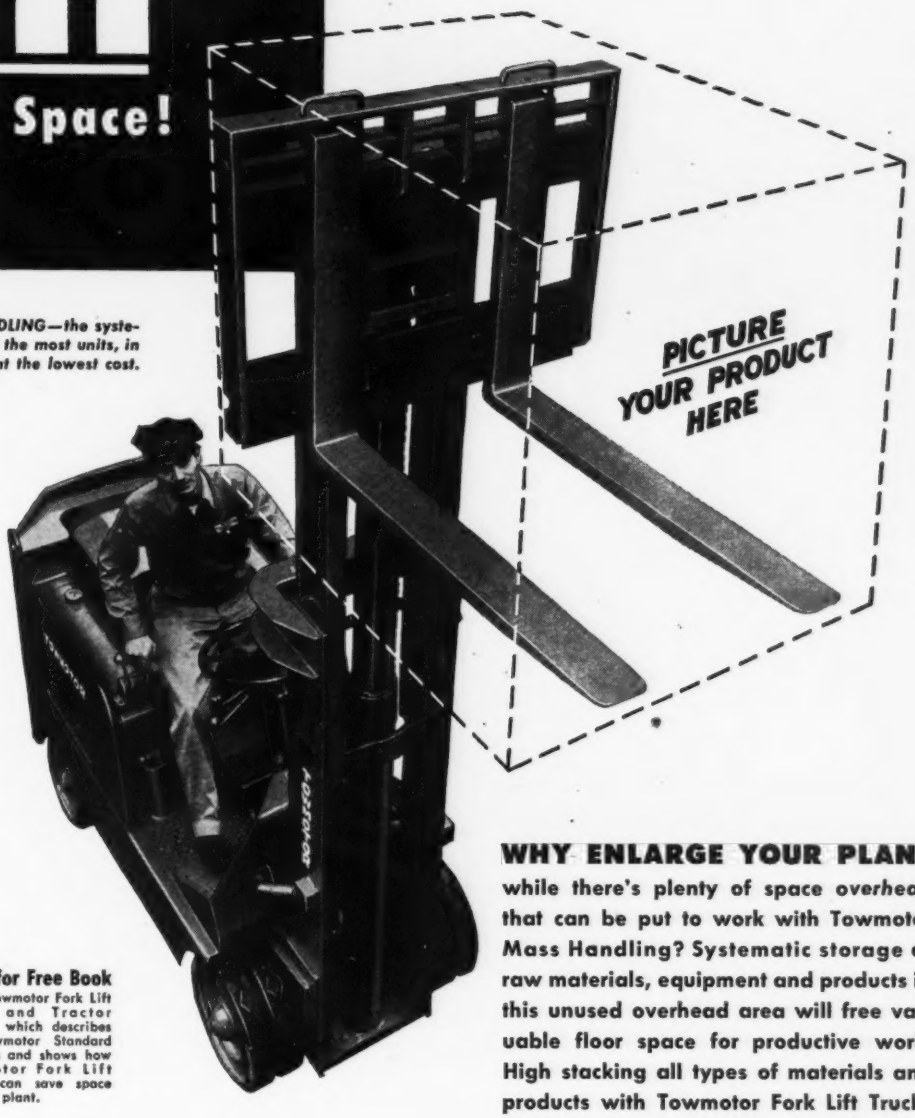

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2. FOR THE SHOW You can *see* the difference in quality between clean, carefully graded and inspected Rayco and ordinary linter cotton.*

3. TO MAKE READY Rayco requires no rag room operations because it comes to you free of impurities, dyes, synthetics, knots and weavings.

4. TO GO Cooker-ready Rayco can help you speed production and lower costs. Get in touch with us. A Railway specialist will gladly visit your plant and show you how and why Rayco Linter Cotton makes fine cotton content paper.

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RAYCO LINTER COTTON

Barre Falls Project Faces Uncertainty

SPRINGFIELD, Mass.—Flood-conscious paper manufacturers throughout this area learned this week that the Senate Appropriations Committee has approved funds allocated for rivers and harbors and flood control projects recently by its sub-committee, including $754,000 to start construction this year of Barre Falls Reservoir. But trouble may lie ahead.

The chairman of the Senate committee, Sen. Styles Bridges of New Hampshire, joined by Senators Homer Ferguson of Michigan and Clyde M. Reed of Kansas, committee members, cast their votes against the subcommittee appropriations and announced that they would call on the Senate to refuse the bill.

The Senate bill calls for a total of $102,027,900 more in appropriations for rivers and harbors and flood control projects across the nation during the new fiscal year, than the House approved. The House did not set aside any funds for the Barre Falls project on the Ware River.

Representative Albert J. Engel, chairman of the subcommittee on civil functions of the War Department of the House Appropriations Committee, has disclosed that he believes the Senate has made increases that are too large over the House version of the bill.

Although the Senate probably will approve the new civil functions appropriations bill despite the protests of Bridges, Ferguson and Reed, the increases which the Senate subcommittee wrote into the legislation may not be able to survive a House-Senate conference committee which will be appointed to iron out differences in the measure, reports from informed Washington quarters indicate.

A.F.L. Wins Preference In St. Regis-Taggart Vote

WATERTOWN, N. Y. — Employes of seven plants of the St. Regis Company and Taggart Corporation favored union shops for three American Federation of Labor unions in elections held recently.

The results were:

For the A.F.L. paper makers — 214 to 4 at Deferiet, 45 to 0 at Watertown, 24 to 0 at Carthage, 31 to 0 at Herring, 49 to 0 at Norfolk, 103 to 2 at Harrisville and 30 to 0 at Oswego.

For the A.F.L. Pulp, Sulphite and Paper Mill Workers — 418 to 7 at Deferiet, 208 to 0 at Watertown, 288 to 0 at Carthage, 73 to 0 at Herring, 172 to 3 at Norfolk, 86 to 0 at Harrisville, 641 to 4 at Oswego and 222 to 6 at Nazareth, Pa.

For the A.F.L. Firemen and Oilers —29 to 1 at Deferiet.

Brown Instrument Announces $2,500,000 Expansion Plan

PHILADELPHIA—A $2,500,000 expansion program, adopted by Brown Instrument Company, will add more than 60 percent to its present manufacturing space and a proportionate increase in employment, said Henry F. Dever, president. Increased sales, which have climbed steadily from war peaks, and expanded research and engineering activities, were the main considerations behind the move, he stated.

The program includes construction of a four-story addition to the main plant at Wayne Junction. Building is expected to begin this month (May) and the first phase of the project is scheduled for completion next March, Dever said. It is designed so that four additional floors may be added at a later date.

European Aid Allots Newsprint to Britain

(Continued from page 13)

has been to obtain a fair and equitable distribution of available newsprint supplies while at the same time making every effort to obtain increased newsprint production, both in the United States and Canada, so as to bring a quick end to the shortage."

Rep. Brown warned the European program chief:

"Inasmuch as the carrying through of your contemplated action, as reported to us, for the purchase and shipment abroad of some 288,000 tons of Canadian newsprint during the next year would create chaos in the publishing industry of the United States, I respectfully request that you furnish this committee, at the earliest possible moment, a full and complete report on any plans you or your organization may have for the purchase or shipment abroad of any Canadian or United States newsprint."

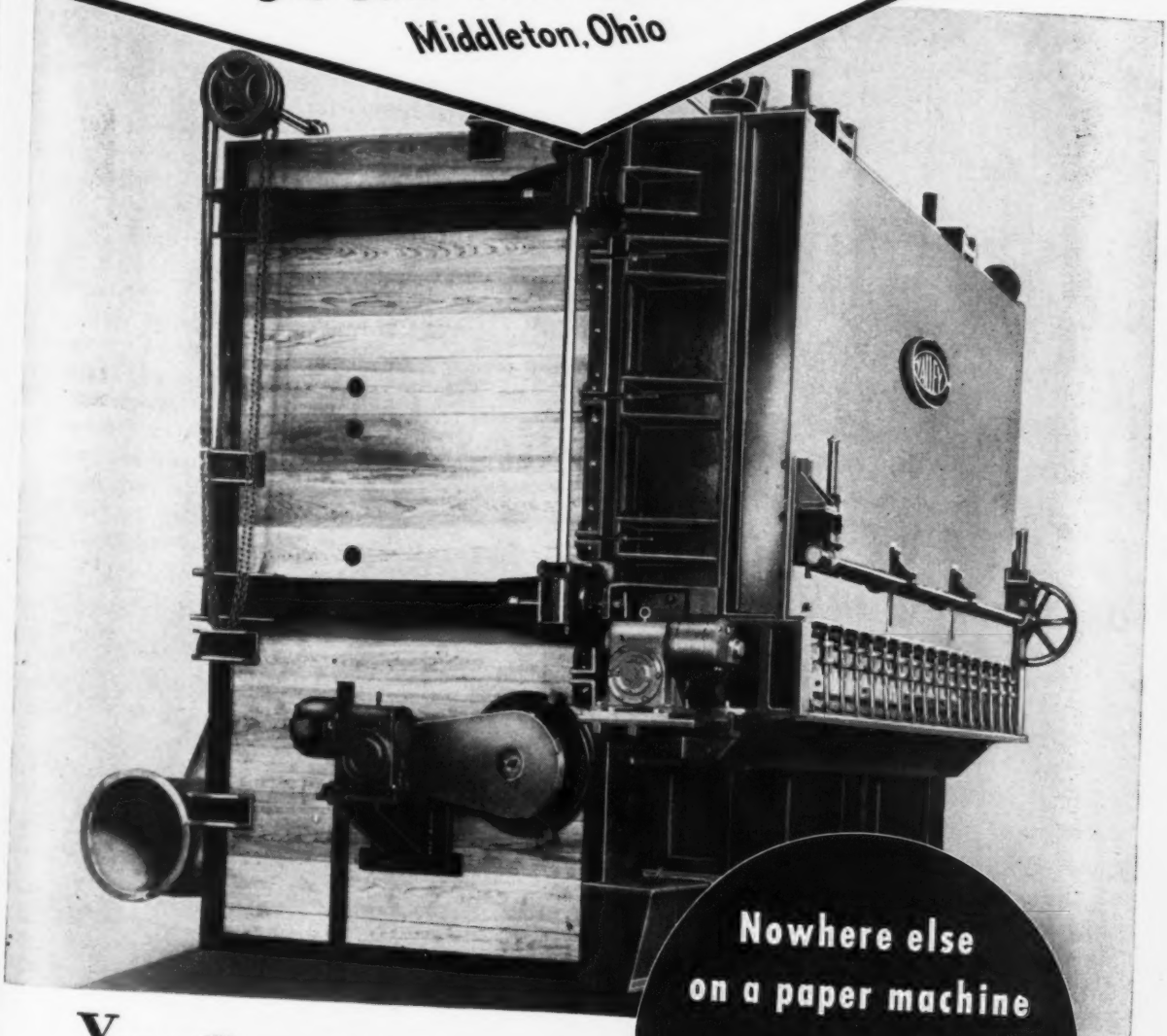
There are varying reports as to the details of the plan to furnish certain European countries with newsprint from this side. Late in April a report from London referred guardedly to possible allocation to the United Kingdom of some 200,000 tons of newsprint, which, said the reports presumably would come from Canada.

This figure checks with the one carried in the latest official list of commodities which it is planned to ship overseas under the European program. According to this list, which has been made available for examination by the State Department, but not widely circulated, a total of 210,000 tons of newsprint is to be furnished in the 1948-49 period comprising some 15 months, of which 200,000 would go to the United Kingdom, and 10,000 tons to Ireland. Slightly less than half the cost of the total would be borne by United States funds, the remainder of the cost being shared by Canada. Total cost of the shipments, it is stated in the reports referred to is $52,000,000. Actual newsprint to be shipped would come entirely from Canadian production, it is stated.

This is on No. 1 Machine

SORG PAPER CO.

Middleton, Ohio



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Butterworth Calender Rolls

DIGESTED

An analysis of the backlog of demand for five leading types of consumers' durable goods—passenger automobiles, vacuum cleaners, electric refrigerators, electric washing machines, and radios—leads the Department of Commerce to the conclusion that in the absence of unfavorable demand developments originating in other sectors of the economy, which would result in a general business decline, the accumulated demand for these products will tend to be worked off in a staggered pattern over the next few years, rather than become exhausted at once or at nearly the same time.

Aside from some types of radios, which are found to be already experiencing a decline in demand, vacuum cleaners are expected to be the first to feel the effects of easing demand, with washing machines, refrigerators and passenger cars following in that order.

The official expectation is that employment this summer will reach the highest total in history, exceeding last year's record of 60 million. This view is based on the assumption that employment will follow the normal seasonal pattern, with increases in construction and agriculture and declines in the textile and apparel industries.—THE GUARANTY SURVEY, *published by the Guaranty Trust Company of New York.*

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1948		Corresponding Weeks—1947	
March 20	101.2	March 22	105.8
March 27	98.2	March 29	107.8
April 3	100.0	April 5	106.1
April 10	102.4	April 12	100.7
April 17	100.4	April 19	105.9
April 24	*104.1*	April 26	105.3

COMPARATIVE MONTHLY SUMMARIES

1947						1948	
Jan.	102.1	May	106.2	Oct.	109.5	Jan.	100.9
Feb.	105.9	June	106.0	Nov.	109.3	Feb.	100.3
Mar.	106.1	July	93.5	Dec.	101.5	Mar.	*100.6*
Apr.	105.1	Aug.	104.2				
		Sept.	102.0	Year Avg.	104.3		

COMPARATIVE YEARLY SUMMARIES

	1941	1942	1943	1944	1945	1946	1947	1948
Year to Date	90.9	102.7	88.6	88.2	88.3	99.7	104.9	*100.7*
Year Average	97.4	90.4	87.8	88.1	89.4	101.1	104.3	

NOTE: *As of January 10 capacity base increased by 13.3%.*

PAPERBOARD OPERATING RATIOS†

Current Weeks—1948		Corresponding Weeks—1947	
March 20	104	March 22	103
March 27	104	March 29	102
April 3	98	April 5	102
April 10	103	April 12	96
April 17	100	April 19	102
April 24	*102*	April 26	100

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1947	99	103	101	100	101	101	90	99	96	101	99	89	98
1948	99	100	*102*										

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

EDITORIAL

Price-Profit Problems

Though they may view as of less than intimate application some sections of his thoughtful address, some portions of a talk by Dr. Joel Dean before the Chamber of Commerce of the United States will be followed with complete understanding. The professor of business economics at Columbia University, addressing a luncheon of the Chamber's annual meeting in Washington cited a few surprising factors about current economic conditions. Then he went on and gave some pointedly thoughtful advice about things that industry should do about them to keep its future firmly under control.

Of the surprising facts in the present price situation he listed six as among the more astonishing. These were

1) That inflation should have been permitted to continue so long and go so far, when recent experiences have made all aware of its perils and when advances in economic and political know-how have provided us ample means to control it.

2) That our government, with the apparent backing of business and the public, should bet all our money on one willing little nag named "Pricing Restraint" who has never yet won a race against inflation, regardless of Presidential exhortation.

3) That after seven years of inflation the level of commodity prices should, in 1948, be so low, in view of the power of the inflationary forces, (i.e. the levels of aggregate demand, money supply, velocity and interest rates) and in view of the few frail inflation controls we are employing.

4) That widespread gray markets, with prices ranging up to 300% of official prices should persist three years after the end of hostilities.

5) The pronounced disparity between the large price advances in strictly competitive markets and the relatively temperate price increases of commodities in monopoloid markets.

6) The low level of the price of loan money and the continuation of a pronounced aversion for debt in the light of the inflationary experience and outlook

In the course of a studied exposition of the factors that affect price policies, which are an executive function he touched on and recommended greater stress on a number of factors, some broadly economic—some directly recognizable. Profit standards, he said, take several forms in modern business practice. (1) Net profit margins over full cost, (2) Contribution margins over variable cost, (3) Break-even points, (4) Rate of return on investment, (5) Growth trend of total profits, (6) Short-run profit maximization, (7) Long-run profit maximization.

Economic profits, rather than accounting profits are the relevant guide here. Accounting profits overstate real economic profits today, because of failure to charge depreciation on a replacement cost basis, and failure to reflect replacement value of inventory. This exaggeration is unfortunate in view of the impact of profits upon the climate of opinion; for it is these high apparent profits rather than the lower real economic profits that affect opinion.

Accident Controls

What with prices and profits and production claiming a lion's share of the industrial news picture scant attention is apt to be given to the less dramatic but highly satisfactory progress that many pulp and paper mills are making in their assault on the accident total for the industry as a whole and their own plants particularly. Accidents always are more dramatic, more quickly remarked, than uninterrupted operation of a department or of a mill, but they are more costly too. In reporting an average frequency rate of 18.3 the Southern Pulp and Paper Safety Association puts a bare figure into the record unless it is known what this figure means. And to too many the number is simply a collection of digits combined into a sum. Actually the rate is an index which shows that 18.3 lost time accidents were recorded for every million man hours on the time clocks of 46 mills in 11 southern states comprising the membership and the area of the association.

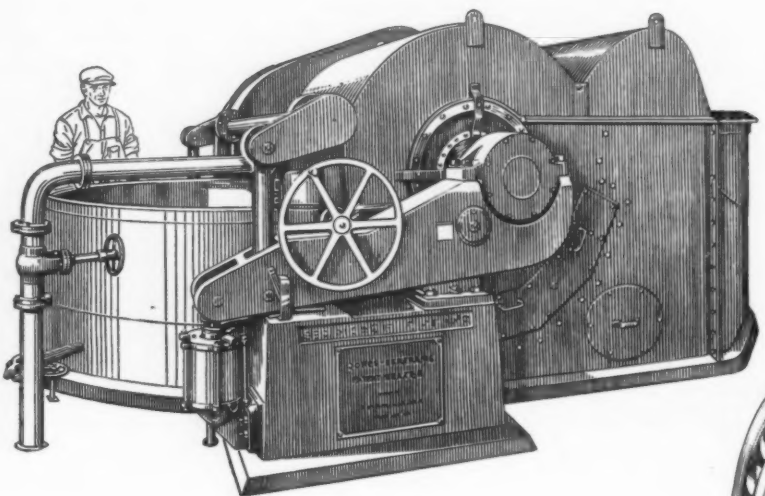
Probably the cost in insurance penalties and payments on account of the hours lost through these accidents is well buried in some actuarial file. Possibly in an industry which now is producing in excess or nearly at the top of its rated capacity the momentary cost of interruption in any productive operation is soon overlooked and forgotten. And yet, in a period during which most of the component costs of a mill operation are subject to factors which are beyond management's control—fuel, freight, raw materials—it is comforting to know that the accident rate is one element that not only is under that control; it is an item in the cost sheet that can be brought lower.

Accidents don't happen; they are caused—is an old truism, but its truth is not to be disregarded because we all have heard it before. But accidents are one element of cost that management can attack without fear of purveyor resistance or of labor opposition.

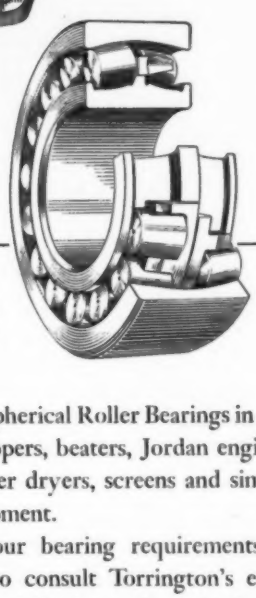
W. L. Cook

Editor

Torrington Spherical Roller Bearings Help You Get Uniformly Refined Fibre



Assured alignment and low friction secured on beater rolls of Jones-Bertrams Beaters produce higher quality stock with reduction in starting torque and maintenance needs and increased beating capacity.



...low maintenance and lower starting torques are other advantages of these efficient Torrington Bearings in paper mill equipment.

The accuracy and permanence of alignment of beater rolls assured by Torrington Spherical Roller Bearings help produce consistently good results in beating paper stock. Higher product quality is secured with a reduction in starting torques, too . . . 19-ton rolls rotate so freely that they may be turned over by hand after installation in the beater.

Add to these advantages the reduction in lubrication and maintenance costs . . . the high safety factor under heavy radial and thrust loads . . . self-alignment under deflection—all benefits that may be secured through the use of Torrington Spherical Roller Bearings in calender rolls, chippers, beaters, Jordan engines, presses and paper dryers, screens and similar paper mill equipment.

Whatever your bearing requirements, it will pay you to consult Torrington's engineers, whose specialized experience in the design, manufacture and application of all major types of anti-friction bearings is at your disposal. Call or write nearest Torrington office.

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INDUSTRIAL DEVELOPMENT

Measuring Liquid Level in Vessels Under Pressure

By C. F. Cusick, Application Engineer, and S. D. Ross, Chemical Engineer, Brown Instrument Company, Division of Minneapolis-Honeywell Regulator Company.

Modern industrial processes often require the measurement of liquid level in containers under pressure above atmospheric, usually as a basis for automatic control. The differential-pressure type mercury manometer, as commonly used in flow measurement, is widely employed for such service, because it is ideally suited to measure the difference between the static pressure in the vessel and the pressure resulting from the column of liquid. Use of flow meter manometers for such liquid level applications has the following advantages:

(1) standard production items available for working pressures up to 5,000 psi
(2) available with electric or pneumatic remote transmission
(3) can be supplied with all the various modes of control, such as on-off, proportional, and proportional plus reset
(4) identical components as employed in the differential pressure type flow meters, thereby simplifying parts stocking and maintenance.

To handle the various liquids encountered, a number of piping arangements and connections to the meter body (manometer) are necessary; each type is discussed separately. On all closed vessel installations, location of the meter body below the minimum level tap is recommended. This simplifies the instrumentation in both installation and maintenance. The connecting lines run downward to the meter body and are easy to fill. In addition, entrained air or gas will work up freely into the vessel or seal pots.

When necessary, the meter body *can* be mounted above the pressure taps, but in placing the equipment in operation, the engineer must be careful to ascertain that the piping is completely filled with liquid. Furthermore, he must frequently check that the piping remains filled with liquid free of entrained air or other gases. Such applications must be considered individually by experienced instrumentation engineers.

Both the Brown electric type meter body and mechanical meter with "dropped" range tube (described herein) can be utilized for liquid level measurement in the differential pressure ranges from 20 inches to 25 feet of water. The same operating principles are employed for both types of manometers and apply, in general, for all closed vessel service. A general discussion of these principles will form a background for the specific system subsequently described.

Fundamental Principles

Schematic layouts for the electric and mechanical type meter bodies are shown in the two views of Fig. 1. With the liquid in the vessel at minimum level, the meter body is subjected to a differential pressure equivalent to the head H_4 in the outer leg; the vessel pressure and the head H_2 are seen to cancel out, being applied on both sides of the meter body. As the level *rises* in the vessel, this differential pressure decreases to zero at the maximum level connection. Such a relationship is seen to be directly the reverse of that found in flow measurment where the differential pressure increases with flow, and accounts for the methods of connecting the electric and mechanical meters, as shown in Fig. 1 and explained below.

In the case of the electric meter, it is only necessary to reverse the outer (power) leads of the inductance bridge circuit to reverse the response of the meter. Thus, the float chamber (high pressure) side of the meter body can be connected to the outer leg, as illustrated, but the instrument will read zero level when the vessel is empty and respond in the normal manner with level changes, the float moving upward for increasing level.

In the case of the mechanical meter, reversal of the instrument response is accomplished by "dropping" the range tube below the float chamber and connecting the latter to the minimum level tap, as shown in Fig. 1. Thus, the float is in its normal upper position for minimum level and moves downward with increasing level (decreasing differential), just as it moves downward with increasing flow when a standard mechanical meter is used in the conventional manner. The dropped range tube provides the necessary chamber for mercury displaced from the float chamber as the level rises.

For the development of the basic formula to calculate the required dif-

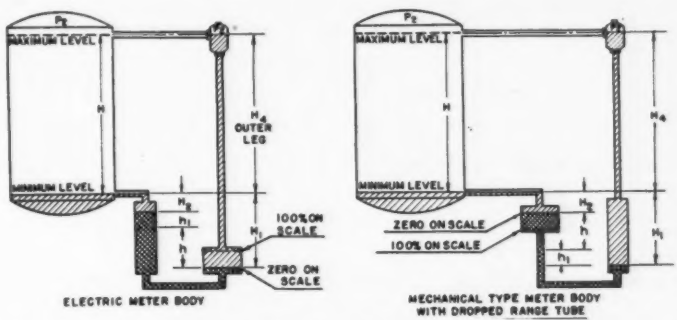

Fig. 1—Basic installation diagrams for differential pressure type meters used to measure liquid level in vessels under pressure.

INDUSTRIAL DEVELOPMENT

Paper Trade Journal, in this new section, proposes to make space available for discussion of administration and operational problems of the pulp and paper industry, as well as for the presentation of independent studies and research on technical and engineering subjects. Noteworthy features of paper mills, converting plants, associated industries and institutions also will be presented, as they become available. These pages will be open to all who are qualified to discuss subjects within these limits. Manuscripts, submitted for approval, will be welcomed.—E. P. McGINN, Industrial Editor.

ferential range of the meter body, it is assumed that the specific gravity (G_1) of the liquid is the same in the connecting piping and the vessel. The equation for the balanced columns (Fig. 1) is, then, as follows:

$$13.54\,h + H_2G_1 = (H_4 + H_1)\,G_1$$

but the linear distance H_1 equals the distance $H_2 + h$ and H_4 equals H, so that by substitution for H_1 and H_4 these equivalents and solution of the equation for h, the following basic formula is obtained:

$$h = \frac{H\,G_1}{13.54 - G_1} \qquad (1)$$

where h = differential in inches of mercury
H = distance between taps in inches
G_1 = specific gravity of the liquid.

It is interesting to note that the range of the meter does not depend upon the pressure in the vessel, so that the operating pressure can be altered as desired without affecting the level measurement.

For liquids which are free of entrained particles or solid forming matter and which can be placed directly in contact with the mercury and material of the meter body, the piping arrangements shown in Fig. 2 can be used. There are two general applications of this system, both using the same piping layout, namely: (1) when the liquid in the outer leg is at the same temperature as the vessel liquid (usually ambient); and (2) when the outer leg liquid is at a different temperature from the vessel liquid (usually lower, with the vessel liquid at an elevated temperature).

Operating Principles

A reservoir is installed at the maximum level tap, as shown, so that there will be no appreciable change in the height of the outer leg as the mercury in the meter body moves from one side to the other with changes in the liquid level. When the liquid in the outer leg is at the same temperature as the vessel liquid and, consequently, has the same specific gravity, the basic formula (1) developed above is seen to apply. However, a lower temperature in the outer leg results in a greater specific gravity which must be considered in the formula for the measured differential, as developed below.

Let G_2 represent the specific gravity of the liquid in the outer leg H_4 (Fig. 1). With the vessel liquid at minimum level, the equation for the balanced columns now becomes:

$$13.54h + H_2\,G_2 = (H_4 + H_1)\,G_2$$

by substitution for H_1 and H_4 as in the previously developed basic formula (1), the following formula is obtained:

$$h = \frac{H\,G_2}{13.54 - G_2} \qquad (2)$$

A comparison of this formula with the basic formula (1) indicates that the differential range of the meter in this case must be greater by the amount $\frac{H \times G_2}{G_1}$ because of the greater specific gravity in the outer leg. The scale or chart range of the instrument will thus be greater than the vertical distance between taps. The sample calculation considered below will point out the effect of this characteristic on the selection of the instrument chart or scale.

Sample Range Selection

Assume that it is desired to measure the level in a vessel under the following conditions:

(1) liquid in the vessel has a gravity of 70° API (based on 60°F) and is at a temperature of 250°F.
(2) the vertical distance between taps is 10 feet and a chart graduated 0-10 is desired.
(3) the vessel liquid is used in the meter body and connecting lines.

On all liquid level calculations, Brown engineers assume an outer leg and meter body temperature of 80°F, unless it is specifically given otherwise. For a 70° API liquid, the following applies:

70° API equals
0.702 specific gravity at 60°F
0.692 specific gravity at 80°F (G_2)
0.617 specific gravity at 250°F (G_1)

Thus, the range tube is designed for 10 feet of a 0.692 gravity liquid in the outer leg. With the vessel liquid at the minimum level, equation (2) provides the following:

$$h = \frac{10 \text{ ft} \times 12 \text{ in./ft} \times 0.692}{13.54 - 0.692}$$

$$= 6.463 \text{ inches of mercury}$$

With this differential, the instrument will read zero level. When the vessel liquid is at the maximum level, however, the mercury columns in the meter body will not be at the same levels, because the head of the outer leg (H_4) is greater than the head in the vessel between taps (H) by the ratio of G_2/G_1. The actual maximum meter range is thus:

$$10 \text{ ft} \times \frac{G_2}{G_1}$$

$$\text{or } 10 \text{ ft} \times \frac{0.692}{0.617} = 11.22 \text{ ft}$$

The chart range of the instrument, therefore, is 0-11.22 feet instead of 0-10 feet, but the meter can never read above the 10 foot level, since any head above this point (the maximum level tap) will be exerted on both sides of the meter body and no further deflection will occur.

If it is desired to obtain a more uniform chart factor, such as a range of 0-12 feet instead of 0-11.22 feet, the alternate piping arrangement (B) in Fig. 2 can be used. The vertical distance "E" would be greater than the distance ("D") and is calculated as follows:

$$\text{"E"} = 12 \text{ ft} \times \frac{G_1}{G_2} = 10.70 \text{ ft.}$$

The range tube would then be calculated for 10.70 feet of G_2 liquid and the range of the meter would be 0-12 feet.

If the meter is indicating only, an alternate procedure to the above is to make a "false" scale to eliminate the odd factor and, in effect, also avoid the increased range. For example, in the present problem, the actual range of the scale for the standard 1.2 inch travel of the float in the meter body is, of course, 0-11.22 feet. However, the printing on the scale could be made direct reading from 0 to 10 feet only. A mark would then be placed beyond 10 on the scale at the 11.22 foot point with the word "equalize" above it for calibrating purposes.

In either of the above methods, the meter does not read full scale when the vessel liquid is at the maximum tap level, or, in other words, the scale travel is somewhat reduced. If this characteristic is undesirable, there are two methods by which it can be overcome, namely: (1) use of a "suppressed mercury head," and (2) use of a special sensitivity slider (instrument suppression).

Suppressed Mercury Head

Fig. 3 illustrates the principle of the suppressed head system, wherein an additional mercury head (h_1) is added in the meter body to balance the difference in heads due to H_4 and H when the vessel liquid is at a higher tem-

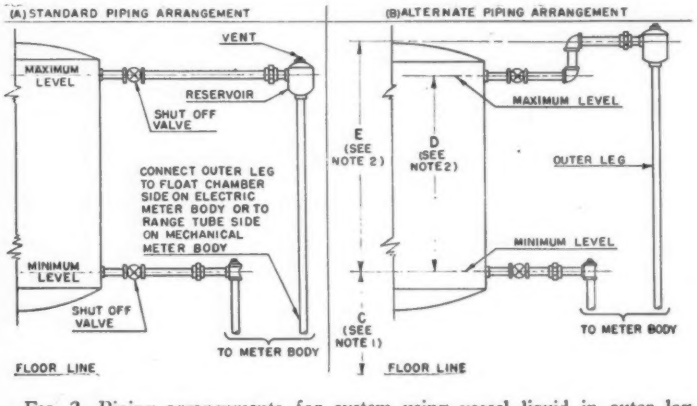

Fig. 2—Piping arrangements for system using vessel liquid in outer leg and meter body piping.

perature. This added head performs the same function in both the electric and mechanical meter bodies—that is, it permits design of the range tube on the basis of the vessel head H—but there is a difference in the manner in which the two types are placed in operation because of the dropped range tube employed with the mechanical meter.

With either type meter, the range tube is designed for differential h, which at minimum level conditions has the following formula, derived as before:

$$h = \frac{H\,G_1}{13.54 - G_2} \qquad (3)$$

where h = differential in inches of mercury
H = distance between vessel taps in inches
G_1 = sp. gr. of liquid at temperature in vessel
G_2 = sp. gr. of liquid at 80°F (or other specific temperature in outer leg, etc.).

Likewise, the suppressed mercury head h_1 required, is obtained from the following formula:

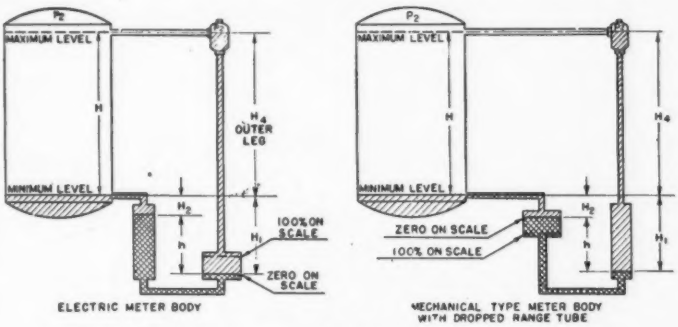

FIG. 3—Principle of operation for suppressed head system.

$$h_1 = \frac{H_4\,G_2 - H\,G_1}{13.54 - G_2} \qquad (4)$$

$$\text{or} \quad \frac{H(G_2 - G_1)}{13.54 - G_2}$$

In the case of the Brown electric meter body, the suppressed head (h_1) is placed in the range tube above the normal head h (see Fig. 3) The meter body is first filled with mercury in the usual manner, thereby causing the instrument to read full scale. When the heads of liquid H_1, H_2, and H_4 (see Fig. 3) are impressed on the meter body, the meter will read below zero. The extra mercury for the suppressed head is then placed in the meter body and the instrument reads zero.

With the Brown mechanical meter body, the suppressed head h_1 is carried in the extension tube from the float chamber to the "U-tube" (see Fig. 3). As a result, it does not involve the addition of mercury but rather must be considered in the design of the range tube length. The exact amount of mercury required, including the suppressed head, is always specified on the "Record for Meter Installation" ("RMI") sheet which is shipped with the instrument.

To place the mechanical meter in operation, therefore, the specified amount of mercury is merely placed in the meter body. This will show no deflection of the pen or pointer, which will still remain beyond full scale. When the liquid head H_1, H_2, and H_4 are impressed on the meter body, however, the instrument will read zero level.

Instrument Suppression

Instrument suppression is obtained by means of a long sensitivity slider (see Fig. 4) inside the instrument case, so that the difference in density between the vessel liquid and outer leg liquid is cancelled mechanically by a change in the amount of pen or pointer movement for a given movement of the float. In this case, the range tube is designed for the head in the outer leg, as in the "Sample Range Selection" given above. The adjustment permits calibration for a standard chart or scale travel, with readings from zero to full scale for the corresponding level in the vessel, by providing a reduced float travel.

In the case of the problem considered under "Sample Range Selection" above, for example, a 0-10 feet chart or scale would be used, and the sensitivity slider adjusted so that the float travel would be reduced sufficiently to compensate for the differing densities, as follows.

With the range tube designed for the outer leg head and with the vessel liquid at the minimum level, a standard float movement of 1.2 inches would result. However, the tank head being of a lighter specific gravity will cause a return float movement of less than 1.2 inches in accordance with the relationship:

$$1.2 \text{ in.} \times \frac{10 \text{ ft}}{11.22 \text{ ft}} = 1.07 \text{ in.}$$

The sensitivity slider would be adjusted to provide a full scale reading for a float movement of only 1.07 inches instead of 1.2 inches.

An advantage of this arrangement is that changes in operating temperatures in the vessel with resultant density changes can be easily compensated

CONNECTING LINK TO PEN ARM
ZERO ADJUSTMENT
ACTUATED BY FLOAT-LEVER OF MECHANICAL METER BODY
NOTE—IN ELECTRIC RECEIVER, SENSITIVITY SLIDER IS MOUNTED ON BALANCE ARM ACTUATED BY COIL ARMATURE
SENSITIVITY ADJUSTING SCREW

FIG. 4—Sensitivity slider for instrument suppression.

by the sensitivity adjustment, whereas in the case of the suppressed head arrangement, it is necessary to re-calibrate the meter. On the other hand, the meter installation with the sensitivity slider is not so accurate in calibration because of the magnified errors resulting from the reduced float travel. The choice as to whether or not suppression is used and, if so, which type is used depends upon the service and amount of suppression required; experienced instrument engineers should be consulted for final consideration of the application.

The use of either type of suppression has the limitation that it does not permit zeroing and checking of the meter in the customary manner employed in flow meter practice, because of the additional mercury which has been added or the instrument slider adjustment. The only way to check and zero the instrument is to have the liquid in the vessel up to the height of the upper tap, either by actual filling of the vessel or by the addition of an external leg on the minimum tap connection which can be filled with a liquid column equivalent to the tank head.

Level measurements of liquids which are free of excessive solids but must be sealed from the meter body are often handled by the piping arrangement shown in Fig. 5, wherein seal pots are located at the minimum and maximum connections with the meter body connecting lines filled with a sealing liquid. This system is almost universally used in oil refinery service where the measurement of liquid levels in pressure vessels is required. In this service, the sealing liquid is generally heavier than the vessel liquid, quite often being a 50-50 mixture of glycerine and water, which has a gravity of 1.125 at 60°F. The system is also applied frequently for measuring the level of light volatile liquids, such as butane.

With the sealing liquid of a heavier gravity than the vessel liquid, the same three methods of applying differential-pressure meters are available, as previously described for the first system wherein the outer leg contains vessel liquid at a lower temperature (heavier gravity), namely:

(1) the use of a chart or scale range which is greater than the vertical tap distance.
(2) the use of a suppressed mercury head
(3) the use of instrument suppression.

The first method is rarely, if ever, acceptable in services such as found in an oil refinery where rising of the

vessel liquid above the maximum level can result in spoilage of the product. Choice between the second and third methods depends upon the conditions previously discussed. Where a number of meters are involved, the additional mercury required for the mercury suppression method may become a pertinent consideration.

In the first method, the formula for the range tube differential is:

$$h = \frac{H\ G_3}{13.54 - G_3} \qquad (5)$$

and the range of the meter will be

$$H \times G_3/$$
$$/G_1$$

where H = distance between taps in inches

vessel specific gravity at operating temperature

G_3 = sealing liquid specific gravity at its operating temperature (about 80°F)

In the second method, the range tube differential is

$$h = \frac{H\ G_1}{13.54 - G_3} \qquad (6)$$

and the suppressed head is:

$$h_1 = \frac{H(G_3 - G_1)}{13.54 - G_3} \qquad (7)$$

In the third method, the differential of the range tube is given by the same formula (5) as for the first method, while the actual float travel will be 1.2 in. times the ratio

$$/G_3$$

Interface Level Measurement

In certain industries, particularly in oil or chemical plants, it is often necessary to measure the interface level between two immiscible liquids in a closed vessel. The general operating principles of the electric or mechanical type meters for such service are much the same as the previously described system involving a sealing liquid in the outer leg and meter body piping, except that a second lighter liquid fills the space above the measured interface level at least up to the upper meter tap.

As an example of the range tube calculation for such a system, consider the simplest case wherein the lower (heavier) liquid can be impressed on the meter body and is used as a seal on the outer leg. With reference to Fig. 1 (assuming the space above the minimum level to be filled with the lighter liquid) the equation for balanced liquid columns at minimum interface level becomes:

$$HG_1 + H_2G_2 + h.13.54 = (H_4 + H_1)G_2$$

Substituting for H_1 and H as previously described and solving for h, the following formula is obtained:

$$h = \frac{H(G_2 - G_1)}{13.54 - G_2} \qquad (8)$$

where h = range tube differential in inches in mercury

H = distance between interface level taps in inches

G_2 = specific gravity of heavier liquid

G_1 = specific gravity of lighter liquid

It will be noted that the balanced column equation contains an added head HG_1 on the left-hand side, because the lighter fluid fills the vessel above the lower tap. The required differential is thus decreased by this amount. Otherwise, the case is exactly the same as the previously considered system and the effects of differing gravity in the outer leg or mercury suppression are similarly handled.

Liquid Purge System

The purge system employs a suitable liquid constantly flowing from a source of supply through the level tap connections as shown in Fig. 6, and into the vessel. The meter body, connecting piping, and outer leg are filled with the purge liquid. Needle regulating valves with "C-Clamp" rotameters in the two lines to the legs are adjusted so that the flow of liquid into the vessel is at as low a rate as possible, yet sufficient to prevent the vessel liquid from entering the connecting lines. The flow through each line must be the same.

Applications of this system are for corrosive liquids, for those having entrained solid particles, and for liquids which when cooled in the meter body and piping would solidify or precipitate solids. Because of the numerous and different liquids which may be handled, it is usually better that such applications be referred to Brown factory engineers. One limitation of its use is the operating pressure in the vessel, since high pressure in the vessel would necessitate high purge pressures which might be excessive.

The general principle of operation of this system is the same as that of the system just described, wherein a sealing liquid is used in the outer leg and meter body piping. A purge must be maintained through both legs, even though the vessel liquid may never reach the maximum level connection, because for correct level readings, both sides of the meter body must be subjected to the same purge flow. The flow of liquid into the lines is at a low rate so that there is no appreciable velocity head and any minor effect is impressed equally on both sides of the meter body.

Gas or Air Purge System

This system, illustrated in Fig. 7, is fundamentally the same as the liquid purge system, the scavenging medium being air or gas instead of liquid. Likewise, the system can, in general, be used on the same applications as outlined for the liquid purge system. The pressure in the vessel must, of course, be less than the available gas or air pressure. Differential pressure regulators are recommended installed

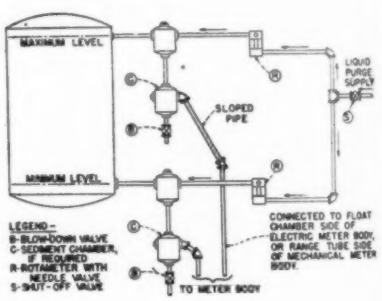

Fig. 6—Liquid purge system.

across the rotameter with needle valve to assure constant flow of the purge medium.

In operation, the flow of gas or air is regulated so that there is no appreciable velocity head. The meter body, connecting piping, and the outer leg are filled with the gas, and, since the gas density can be neglected, the only head effect to consider in the range tube selection is that due to the liquid in the vessel. In this system, therefore, the minimum level connection is made to the float chamber side of the meter body, whether it is of the electric or mechanical type and, in the case of the latter, the dropped range tube construction is not required.

Thus, the range tube differential is calculated on the following basis:

$$h = \frac{H \times G_1}{13.54} \qquad (9)$$

where H = maximum measured head

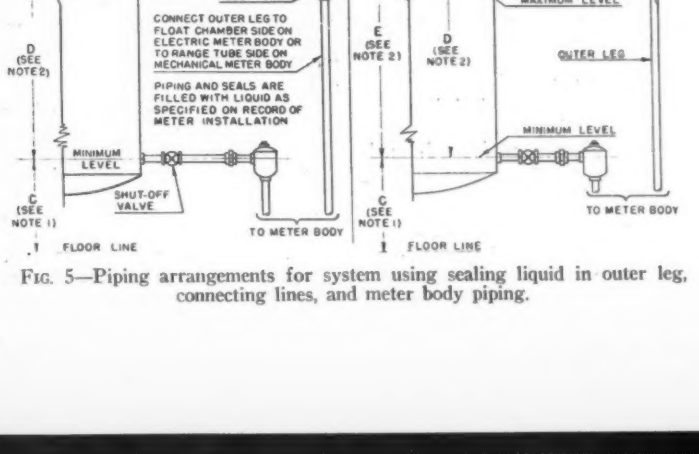
(A) STANDARD PIPING ARRANGEMENT
SHUT OFF VALVE
VENT
MAXIMUM LEVEL
RESERVOIR
CONNECT OUTER LEG TO FLOAT CHAMBER SIDE ON ELECTRIC METER BODY OR TO RANGE TUBE SIDE ON MECHANICAL METER BODY
D (SEE NOTE 2)
PIPING AND SEALS ARE FILLED WITH LIQUID AS SPECIFIED ON RECORD OF METER INSTALLATION
MINIMUM LEVEL
C (SEE NOTE 1)
SHUT-OFF VALVE
TO METER BODY
FLOOR LINE
(B) ALTERNATE PIPING ARRANGEMENT
MAXIMUM LEVEL
E (SEE NOTE 2)
D (SEE NOTE 2)
OUTER LEG
MINIMUM LEVEL
C (SEE NOTE 1)
TO METER BODY
FLOOR LINE

Fig. 5—Piping arrangements for system using sealing liquid in outer leg, connecting lines, and meter body piping.

in the vessel in inches and G = specific gravity of the vessel liquid at its operating temperature.

Remote Transmission of Level Measurements

Frequently, it is desired to measure the level in a closed vessel at some location in the plant and have the recorder or recording controller at a remote centralized control panel. The electric meter body inherently permits remote transmission of the level measurement, since it utilizes an induction bridge circuit with the meter body connected to the indicator or recorder by a three-wire cable. Where desired, an indicator, located near the vessel, can be connected electrically in parallel with a remote recorder or recording controller—thus providing the operator with an indication of the level at the process as well as a permanent chart record in the control house.

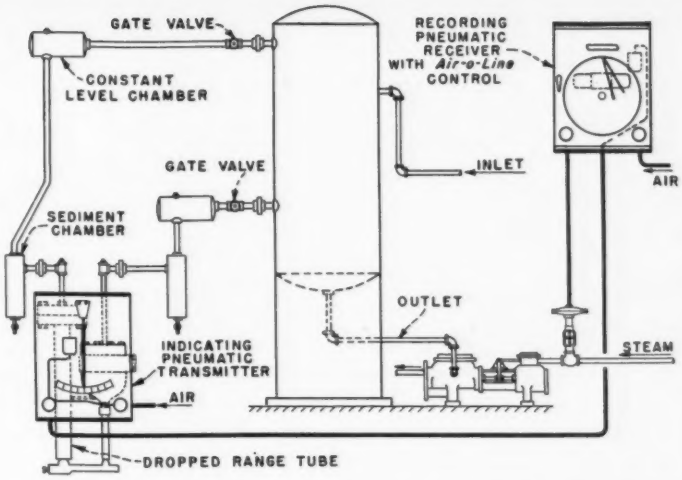

Fig. 8—Typical liquid level installation utilizing pneumatic transmission.

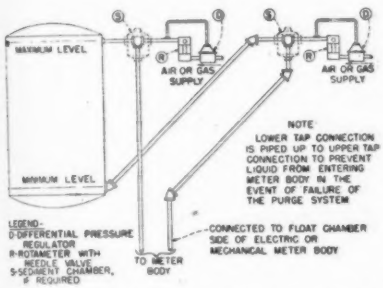
MAXIMUM LEVEL
MINIMUM LEVEL
AIR OR GAS SUPPLY
AIR OR GAS SUPPLY
NOTE
LOWER TAP CONNECTION IS PIPED UP TO UPPER TAP CONNECTION TO PREVENT LIQUID FROM ENTERING METER BODY IN THE EVENT OF FAILURE OF THE PURGE SYSTEM
LEGEND:
D-DIFFERENTIAL PRESSURE REGULATOR
R-ROTAMETER WITH NEEDLE VALVE
S-SEDIMENT CHAMBER, IF REQUIRED
TO METER BODY
CONNECTED TO FLOAT CHAMBER SIDE OF ELECTRIC OR MECHANICAL METER BODY

Fig. 7—Air or gas purge system.

Where the mechanical level meter is used, the meter body can be supplied mounted on the back of an indicating pneumatic transmitter located near the process vessel. The Brown pneumatic transmission system, utilizing matched transmitting and receiving bellows, assures accurate and responsive recording of the level in a remote recording receiver. A typical arrangement of such a system is illustrated (Fig. 8) wherein the receiver is equipped with Air-o-Line control for regulating the outlet flow. If desired, the transmitter can be provided with pneumatic control, instead; and, if remote adjustment of its set point is desired, a Remoteset panel can be installed on the recorder panel to position the set point pneumatically.

Studies on Composition of Bark; Utilization for Structural Boards*

L. P. Clermont and H. Schwartz

Forest Products Engineers, Forest Products Laboratories, Ottawa, Canada

Introduction

A program of research on the analysis of barks from the more important Canadian species was undertaken prior to experimenting on the possibility of utilizing these barks. A previous publication *(1)* dealt with the chemical composition of western red cedar *(Thuja plicata)* bark. The first part of the present paper contains the results of analyses of barks from balsam *(Abies balsamea)*, black spruce *(Picea mariana)*, white spruce *(Picea glauca)*, eastern white hemlock *(Tsuga canadensis)* and Douglas fir *(Pseudotsuga taxifolia)*. The second part of the paper is concerned with a description of the experiments carried out on the preparation of structural boards of the insulation and hardboard types from barks from western red cedar and eastern white cedar *(Thuja occidentalis)*.

Although analyses for certain of the constituents in some of the above-mentioned barks have been reported in the literature *(2, 3, 4)*, comparison of results for different barks is difficult to make. Very often the history of the starting material is unknown or unreported, the solvent extraction of the various barks prior to analysis differs, and methods of analysis may also be different. It was therefore considered advisable to carry out a series of analytical experiments under standardized conditions on materials whose history is well known.

The barks were analyzed by the usual methods applied to wood. These methods are purely arbitrary and the results obtained on barks are perhaps less absolute than those obtained on wood. Nevertheless, the results assist in predicting the behaviour of barks if they were subjected to the technical processing employed in the pulp and paper industry.

History of the Barks and Preparation of Samples

At the Forest Experimental Station at Petawawa, Ontario, ten, 6- to 8-inch diameter black spruce trees from a 70- to 80-year old stand were felled

TABLE I.—ANALYSIS ON BARK FROM SIX CANADIAN SPECIES

	Balsam	Black Spruce	White Spruce	Douglas Fir Inner	Douglas Fir Outer	Eastern Hemlock Inner	Eastern Hemlock Outer	Western Red Cedar(b) Inner	Western Red Cedar(b) Outer
Cold water soluble (%)	22.6	25.9	33.9	10.3	20.0	22.7	21.8	2.3	1.0
Hot water soluble (%)	26.7	32.3	41.8	13.5	29.2	28.9	30.0	5.3	6.4
Ether soluble (%)	23.6	25.5	22.9	15.7	34.4	17.5	23.9	4.9	6.3
Ash (%)	2.0	2.4	3.1	2.7	0.9	1.5	1.0	2.8	0.9
Successive extractions with alcohol-benzene, alcohol and hot water (soluble %)	36.2	38.7	47.7	16.6	42.9	34.1	40.2	9.3	11.5
"Lignin" (Insoluble in 72 per cent sulphuric acid) (%)(a)	32.3	27.4	27.3	41.5	55.5	38.9	52.7	34.3	41.5
Ash in "lignin" (%)	0.2	0.5	1.0	0.3	trace	0.4	trace	...	...
1 per cent sodium hydroxide soluble (%)(a)	35.3	39.2	44.0	29.2	44.5	24.1	32.7	20.1	33.6
Pentosans (%)(a)	12.5	17.4	18.3	9.5	7.4	10.4	8.4	10.9	10.3

(a) Analyses for "lignin", one per cent sodium hydroxide soluble and pentosans were carried out on material which had been extracted successively with alcohol-benzene, alcohol and hot water. Yields for these three analyses are based on moisture-free extracted bark.

(b) Figures for western red cedar are taken from a report previously published (1).

* Contribution from the Forest Products Laboratories of Canada, Mines, Forests and Scientific Services Branch, Department of Mines and Resources, Ottawa.

TABLE II.—PULPING EXPERIMENTS WITH FIVE PER CENT SODIUM HYDROXIDE SOLUTION

Extraction Bark	Lignin in Extracted Bark (%)	Pulp Yield (%)	Lignin in Pulp (%)	Pentosans in Pulp (%)	Lignin in Spent Liquor: Yield on extd. bark basis (%)	Lignin in Spent Liquor: Methoxyl in Lignin (%)	Lignin in Spent Liquor: Pentosans in Lignin (%)
Balsam	32.3	39.5	15.1	5.1	18.6	8.8	2.9
Black spruce	27.4	33.7	8.9	6.9	18.7	7.3	4.1
White spruce	27.3	30.3	5.7	5.3	18.7	4.8	2.9
Eastern hemlock outer bark	52.7	31.6	19.6	4.7	32.1	7.9	1.9
Douglas fir outer bark	55.5	24.9	7.6	5.6	37.0	7.5	1.2
Western red cedar outer bark (a)	41.5	33.6	12.1	6.7	39.2	5.0	1.7

(a) This sample was pulped with five per cent sodium hydroxide solution at 170 degrees C. for 4 hours.

in the spring of the year. Ten trees each of white spruce and balsam, 6- to 8-inches in diameter, but taken from a 50- to 60-year old stand, were also felled. Strips of bark about six inches wide were peeled from the entire length of each tree felled, so that a total of about 75 pounds of bark was obtained from each species. Three pieces of bark about six inches long were cut from each strip of bark (one from the center and one from each end), allowed to air-dry for a week, ground in a Wiley mill using a coarse screen, and placed in stoppered bottles until used. Analyses were carried out about a month after trees were felled.

The Douglas fir bark (2 to 3 inches thick) was obtained from logs which had been towed in salt water and stored at the plant pond of a British Columbia mill until sawn. The bark as obtained was separated into inner and outer fractions with the aid of a knife. Inner bark in this instance includes the bark within the innermost layer of periderm. By the method of separation, the outer bark was found to represent 93 percent of the total bark. Samples were ground and stored as described above.

Eastern hemlock bark was obtained from 17-inch diameter trees from a 225-year old stand in Novia Scotia. The bark was separated into inner and outer fractions prior to grinding in a Wiley mill. The outer bark represented 73 percent of the total bark. It might be mentioned that the trees were felled in February of the year, barked in April, and the bark analyzed during the summer months.

Analysis of Barks

Cold- and hot-water solubilities were carried out according to the accepted Schorger procedure (5); ether solubility by extraction with anhydrous ether of two grains of air-dry material in a Soxhlet extractor for eight hours, followed by washing of the residue and drying in an oven at 105 degrees C.; "lignin" by the Standard TAPPI method; one percent sodium hydroxide solubility by TAPPI method T4m44; and pentosans by tentative TAPPI standard T223m—43. Analyses for "lignin", one percent sodium hydroxide soluble and pentosans were carried out on samples which had been pre-extracted successively in a Soxhlet extractor with alcohol-benzene (1:1) for 24 hours, with alcohol for 24 hours, and with water for 24 hours. All results appear in Table 1. Results of analyses published recently *(1)* on western red cedar bark are also included in this Table.

The water solubilities of balsam, black spruce, white spruce, Douglas fir and eastern hemlock barks are all rather high. The very high figure for white spruce (33.9 percent soluble in cold water) is probably due to the presence of considerable tannin material. Graham and Rose *(3)* report a tannin content for white spruce bark of over 20 percent. It is interesting to note that the Douglas fir outer bark still contains 20 percent of material soluble in cold water, despite the fact that logs from which this bark was obtained were watertowed. Apparently Douglas fir bark in bulk offers considerable resistance to penetration by water. The western red cedar bark also was obtained from logs which were water-transported and the low figure for water solubility is probably caused by the solubilization of materials while the logs were immersed in water *(1)*.

TABLE III.—PULPING EXPERIMENTS WITH TEN PER CENT SODIUM HYDROXIDE SOLUTION

Extracted Bark	Pulp Yield (%)	Lignin in Pulp (%)	Pentosans in Pulp (%)
Balsam	10.3	19.1	1.3
Black spruce	16.6	18.4	5.3
White spruce	17.2	19.0	2.3
Hemlock—outer bark	13.2	35.4	4.5
Douglas fir—outer bark	7.3	12.7	1.6

The ether solubilities of all barks except the western red cedar are high, the figure for black spruce being 25.5 percent. Hay and Lewis *(2)* report the ether solubility of black spruce as 14.1 percent while Richter *(6)* reports a figure of 2.26 percent. Such large variations are rather unexpected and may be due to one or more of the following reasons, namely, the age of the tree from which the bark was obtained, the season of the year in which the tree was felled, differences in methods of sampling and analysis of the bark, and natural variation between different trees.

The authors found a pentosan content of 17.4 percent and a "lignin" content of 27.4 percent for black spruce whereas Richter *(6)* reports figures of 8.84 and 45.84 percent, respectively. This difference is probably due largely to the fact that the former investigation carried out their analyses on solvent-extracted material.

It is apparent that the value of results of bark analyses is dependent on a complete knowledge of the history of the raw material. Otherwise comparisons and evaluations are impossible to make.

Pulping Experiments

Twenty-gram samples of solvent-extracted balsam, black spruce and white spruce barks, and samples of eastern hemlock and Douglas fir outer barks were heated in a stainless steel autoclave with 300 ml. of five percent sodium hydroxide solution at 170 degrees C. for one hour. The pulp residues from the cooks were filtered and washed with hot water, dried, weighed, and analyzed for "lignin" and pentosans.

The filtrate from each cook was acidified, and the floccultent ligneous precipitate formed was centrifuged, washed on the centrifuge with water several times, dried in a vacuum oven, weighed, and analyzed for methoxyl and pentosans. The results of these experiments appear in Table 2. Results previously obtained on western red cedar bark *(1)* are also included in this Table.

It may be noted that, notwithstanding the relatively mild cook used, the yields of pulp are mainly in the 30 percent range. The yield from Douglas fir is a little lower, being 24.9 percent, while the yield from balsam is a little higher, being 39.5 percent. The "lignin" contents of the pulps range from 5.7 to 19.6 percent.

A second series of cooks was made in which the five samples of bark were cooked under more drastic conditions, *i.e.*, ten percent sodium hydroxide solution at 170 degrees C. for four hours. The results of these experiments are

TABLE IV.—ANALYSIS FOR REDUCING AND FERMENTABLE SUGARS

		Balsam	Black Spruce	White Spruce	Eastern Hemlock Outer Bark	Douglas Fir Outer Bark
Extracted Bark	R.S.(a) (%)	61.3	61.6	57.5	43.4	41.2
	F.S.(b) (%)	47.3	43.4	39.7	33.8	32.0
	F.S. Calculated on unextracted bark basis (%)	30.1	26.6	20.8	20.3	18.3
Pulp from Extracted Bark	R.S. (%)	91.5	99.1	99.6	85.9	103.0(c)
	F.S. (%)	85.0	91.0	92.5	79.7	96.7
	F.S. Calculated on unextracted bark basis (%)	21.4	18.8	14.6	15.1	13.7

(a) R.S. represents total reducing sugars calculated as glucose.
(b) F.S. represents fermentable sugars.
(c) In reporting of results, the possibility exists of obtaining over 100 per cent of the weight of the sample as glucose, because in the conversion of the polysaccharides to monosaccharides during acid hydrolysis water is taken up and this water is included in the weight of the reducing material present.

TABLE V.—PROPERTIES OF SOFTBOARDS FROM EASTERN AND WESTERN CEDAR BARKS

Material	Eastern Cedar		Western Cedar	Western Cedar and 10% Sulphite Screenings	Western Cedar and 10% Groundwood Screenings
Pressing conditions	100 p.s.i.	Pressed (a) to desired thickness	100 p.s.i.	100 p.s.i.	100 p.s.i.
Thickness (inches)	0.37	0.48	0.46	0.45	0.52
Specific Gravity	0.38	0.29	0.27	0.28	0.30
Tensile Strength (p.s.i.)	617	409	42	210	93
Water Absorption in 2 hours (% by volume)	6.1	11.4	3.6	7.4	5.8

(a) Pressed to a thickness of 0.45 inch in the press.

given in Table 3. The yields of pulp obtained are very low, ranging from 7 to 17 percent, but the "lignin" contents are considerably higher than in the pulps obtained under milder conditions. Severe alkaline pulping conditions apparently solubilize a much greater proportion of the non-ligneous components, presumably carbohydrates, with but little greater removal of ligneous constituents. Resistance to the pulping action of alkaline solutions by portions of the "lignin" fraction of barks has been reported in the literature on a number of occasions *(7, 8)*.

The methoxyl contents (see Table 2) of the "lignins" in the spent liquors from the five percent sodium hydroxide cooks are much lower than those of wood, ranging from 5 to 8.8 percent.

In general, the results of the pulping experiments fit into the pattern of expected chemical behaviour of barks.

Fermentable Sugars in the Barks

The amount of fermentable sugar present was determined for the five solvent-extracted bark samples used in the pulping experiments and the five pulps obtained by cooking these extracted barks with five percent sodium hydroxide solution at 170 degrees C. for one hour. The barks were hydrolyzed with sulphuric acid according to the method of Saeman, Bubl and Harris *(9)*. The hydrolyzates were analyzed for reducing sugars by the Shaffer and Somogyi method *(10)* and for sugar fermentable with baker's yeast by the rapid yeast sorption method *(11)*. Reducing sugars were calculated as glucose. Results appear in Table 4.

It may be noted that the amount of fermentable sugar present in the solvent-extracted bark samples ranges from 32.0 to 47.3 percent. However, when calculated on the unextracted bark basis, the fermentable sugar range is only from 18.3 to 30.1 percent.

The figures for the fermentable sugars present in the pulps, calculated on the unextracted bark basis, are of interest, ranging from only 13.7 to 21.4 percent. Assuming that these fermentable sugars originate from a cellulosic type of polysaccharide, it is apparent that the amount of cellulosic material in the unextracted bark is quite small. The amount of cellulose, if present, would probably be considerably less than in the 13.7 to 21.4 percent range, as these figures also include sugars which originate from hemicellulose material present.

Structural Boards from Eastern and Western Cedar Barks

Because of the fibrous nature of eastern and western cedar barks, it was considered possible that these materials could be used in producing structural boards of reasonably good strength. As a result, experiments of a preliminary nature were undertaken on the preparation of boards of both the insulation and hardboard types from these raw materials.

Softboards

The material used consisted of either eastern cedar bark chips about one-inch square or western cedar bark slabs which had been put through a two-knife laboratory chipper. The material was steamed at 100 p.s.i. for 20 minutes and then treated at 2.5 percent consistency in a Valley beater for 13 minutes in the case of the eastern cedar and for 20 minutes in the case of the western cedar bark. Three percent of a mixture of rosin and wax emulsion size was added to the stock in the beater prior to the formation of sheets or mats on a 12 by 12 inch hand-sheet machine. The mats were then formed into boards in a hydraulic pressing between wire screens at 100 p.s.i. for one minute. Boards were also made in which the mats were pressed to a thickness of 0.45 inch in the press. After removal from the press, such boards increased in thickness to close to 0.5 inch. The boards were dried in an oven at 125 to 140 degrees C. for six hours and allowed to condition for a week at 65 percent relative humidity and 22 degrees C.

Three boards were made from bark alone and three boards from mixtures of bark and (1) ten percent sulphite pulp screenings and (2) ten percent groundwood pulp screenings. From each set of three boards, four to eight strips, 10 inches long and 1.5 inches wide, were tested for tensile strength, and four pieces 4 by 4 inches in size, were tested for water absorption in two hours. The average results appear in Table 5.

It was aimed to prepare boards about 0.5 inches thick and of a specific gravity of about 0.28. It was considered that the boards would be acceptable as regards tensile strength, if they conformed with U. S. Federal Specification LLLF-32 lb. December 17, 1942, for fibreboard, which calls for a minimum tensile strength of 150 p.s.i. The water resistance aimed for was a maximum absorption of water of seven percent upon immersion in water for two hours.

It may be noted from the Table that boards from eastern cedar, when pressed to 100 p.s.i., have high tensile strength (617 p.s.i.) but are too thin and too dense. When pressed to a thickness of 0.45 inch in the press, the tensile strength, though a little lower (409 p.s.i.), was still considerably above the minimum requirements for softboards. Western cedar bark alone does not produce a satisfactory board with regard to tensile strength but does come within the acceptable range when ten percent of sulphite pulp screenings are added.

The water resistance of most of the boards was fairly good. It is considered that this property can be controlled, within limits, by proper sizing.

It might be pointed out that the experimental work reported here is only of an exploratory nature. The conditions used as regards presteaming, method of fiberizing, sheet formation, and pressing are by no means optimum. The results are reported merely to indicate that a good possibility exists of producing softboards of the insulation type from eastern and western cedar barks, It is intended to extend this investigation to include other barks and to carry out a more comprehensive investigation, using an attrition mill instead of the Valley beater.

Hardboards

Boards about 0.17 inches thick and of a specific gravity of about 0.9 were prepared. The procedure for their preparation, up to the stage of pressing, was the same as that described for the softboards. At this point the mats were placed in a mold with a wire screen at the bottom and a stainless steel plate, coated with a lubricant, at the top. They were then pressed at a maximum pressure of 500 p.s.i. and a maximum temperature of 190 degrees C. for ten minutes, according to the three-stage procedure recommended by Schwartz, Pew and Schafer *(12)* for the preparation of hardboards from wood waste. The boards were allowed to stand at 65 percent relative humidity and 22 degrees C. for about a week prior to testing.

TABLE VI.—PROPERTIES OF HARDWOODS FROM EASTERN AND WESTERN CEDAR BARKS

Material	Eastern Cedar	Eastern Cedar and 10% Sulphite Screenings	Eastern Cedar and 10% Groundwood Screenings	Western Cedar	Western Cedar and 10% Sulphite Screenings	A Commercial Hardboard
Thickness (inches)	0.17	0.17	0.18	0.19	0.20	0.14
Specific gravity	0.85	0.91	0.92	0.90	0.90	1.06
Modulus of Ruptures (p.s.i.)	2790	3020	....	1530	1770	6660
Tensile strength (p.s.i.)	1992	2987	2612	1100	1167	4460
Water absorption in 2 hours (% by volume)	5.2	11.1	5.6	12.0	....	8.0

Boards were made as before from bark alone and also from mixtures of bark with (1) ten percent sulphite pulp screenings and (2) ten percent groundwood pulp screenings. The methods of testing of the boards was the same as for the softboards, except that specimens were also tested for static bending on a span of three inches. The average modulus of rupture as well as the average results of other tests are given in Table 6.

Figures for modulus of rupture and tensile strength on eastern cedar are about double the corresponding figures on western cedar. However, they are still considerably lower than the strength figures for a commercial hard-pressed fibreboard, even after the addition to the stock of either ten percent sulphite pulp or groundwood pulp screenings. They are also considerably below the minimum requirements specified in U. S. Federal Specification LLL-F 311 for hard-pressed fibreboard. These specifications call for a minimum density of 60 lb. per cu. ft. and a minimum modulus of rupture of 6000 p.s.i. for boards 0.125 ± 0.0156 inches thick.

Conclusions

From the experiments carried out, although limited in scope, there are indications that a softboard of the insulation type, of acceptable tensile strength, can be prepared from eastern cedar bark. Western cedar bark alone produces a board of very low tensile strength. The strength of this board is, however, increased considerably by the addition of ten percent of sulphite pulp screenings to the stock.

Hard-pressed boards prepared from eastern cedar bark are considerably higher in modulus of rupture and tensile strength than boards from western cedar bark.

Acknowledgments

The authors wish to thank Dr. F. Bender and Mr. G. Latremouille of the Forest Products Laboratories for cooperation in the planning and the carrying out of the experiments on the preparation of structural boards. Thanks are also extended to the Division of Timber Mechanics.

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NEW LITERATURE

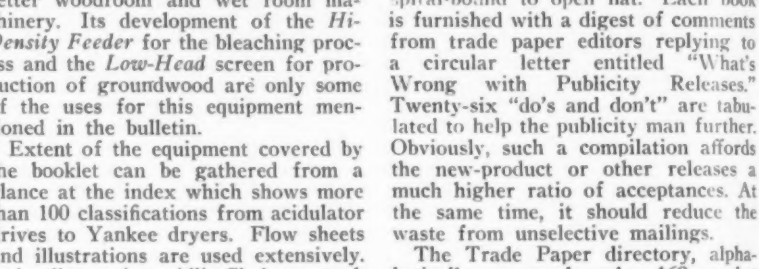
Forest To Finished Product Portrays A-C Equipment

The unusually wide range of equipment made available to the pulp and paper industry from woodlot to completed product by Allis-Chalmers Manufacturing Company is graphically portrayed in a new 32-page booklet released by the company.

In addition to pointing to the wide range of power generation distribution, utilization and control equipment supplied the industry, the bulletin describes the company's contribution to better woodroom and wet room machinery. Its development of the *Hi-Density Feeder* for the bleaching process and the *Low-Head* screen for production of groundwood are only some of the uses for this equipment mentioned in the bulletin.

Extent of the equipment covered by the booklet can be gathered from a glance at the index which shows more than 100 classifications from acidulator drives to Yankee dryers. Flow sheets and illustrations are used extensively.

A glimpse into Allis-Chalmers tank and plate facilities for producing cooking and wet room equipment is afforded with the statement that no plate fabrication job is too large or difficult for the company to handle, the only limitation as to size of equipment that can be built being railroad shipping capacity.



Typical of the flow charts in the new Allis-Chalmers bulletin "Forest to Finished Product" is this one showing the wide range of Allis-Chalmers equipment employed in woodroom operations. These include pumps, motors, drives, cut-off saw, slasher, Streambarker, bark screen, carriage and bandmill units, chip screen, Defiberizer and Interplane Grinder.

Copies of the new bulletin, No. 25B6827, are available upon request from Allis-Chalmers Mfg. Co, Milwaukee 1, Wis.

Trade Paper Publicity Requirements Compiled

A directory for publicity men which specifies the requirements of twelve hundred trade papers has just been published by George Boyles, Advertising.

This new *Free Publicity Data* book is a working tool which provides inquiry and sales producing opportunities for advertising, sales promotion, publicity and public relations men. It tells exactly what kind of releases business papers, domestic and foreign, will print. Only those publications that give editorial reference to new products, new literature, and so forth are listed. For each publication, the publicity man is given the exact requirements: type and length of material wanted, type of illustrations accepted, and the department or editor (by name) to whom the releases go.

The *Free-Publicity Data books* are spiral-bound to open flat. Each book is furnished with a digest of comments from trade paper editors replying to a circular letter entitled "What's Wrong with Publicity Releases." Twenty-six "do's and don't" are tabulated to help the publicity man further. Obviously, such a compilation affords the new-product or other releases a much higher ratio of acceptances. At the same time, it should reduce the waste from unselective mailings.

The Trade Paper directory, alphabetically arranged under 168 market classifications is priced at $25. All books sold subject to five days' free trial. Source: George Boyles, Advertising, 1006 Portage Street, Kalamazoo 7, Mich.

L-N's "Modern Precision" Publicizes pH Indicator

Daily operation of Leeds and Northrup's Glass-Electrode pH Indicator in paper mills is described in the winter edition of the company's *Modern Precision*. Considered as basic paper mill equipment, the instrument is used for testing bleach, for testing stock at the machines as a check on automatic control, to calibrate colorimetric standards, and to make periodic checks at each point in the paper-making process. It also helps in controlling the water recovery operation. Should an inferior run of paper come through, trouble-shooting by pH measurements is easy and quick with the indicator.

For laboratory use, the instrument has ample accuracy for many tests which are described in the bulletin.

Catalog EM9-96 which gives full information about the L-N pH Indicator is available from Leeds & Northrup Company, 4902 Stenton Avenue, Philadelphia 44, Pa.

EQUIPMENT AND SUPPLIES

Alhydro Produces Floc By Electrolysis

BALTIMORE, Md.—Alhydro Floc Producer, a new device for the formation of aluminum hydroxide floc, available in single or multiple units for water treatment plants, is manufactured and marketed by Alhydro Inc., 516 N. Charles Street. The floc producer utilizes the principle of electrolytic dissolution of aluminum in water to form aluminum hydroxide. Tests conducted under a wide variety of water conditions are said to have proven that this is the first successful device to operate on this principle.

Variable low voltage direct current is passed through an assembly of alternate aluminum and stainless steel plates, mounted on a stainless steel tank. The aluminum plates serve as the anode and as the current passes through the cell aluminum particles are released. The current also causes dissociation of water, resulting in the formation of hydroxyl ions which are available for combining with the aluminum ions to form basic aluminum hydroxide.

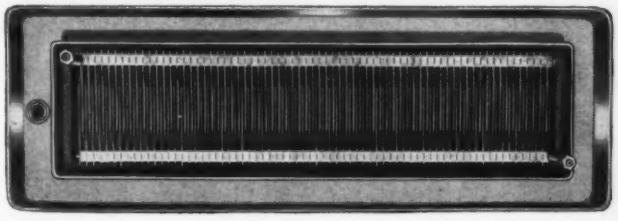
A controlled flow of water is maintained in the tank. The aluminum hydroxide floc as it forms rises to the top of the tank and is carried over a launder which extends around the four sides of the tank to a discharge pipe which introduces it into the main body of the raw water.

From five to ten percent of the volume of water to be treated passes through the tank and as the aluminum hydroxide forms the aluminum plates are gradually reduced in thickness. New plates are readily installed in the floc producer in less than an hour without the use of special tools or equipment.

Outside of Alhydro tank

The standard size unit of the floc producer is 45 inches by 13 by 34 and may be used in multiples, depending upon the volume of water to be treated. The cost of treatment is comparable to the cost of standard methods and with the Alhydro unit the coagulation is always definite. The cells occupy less space than is required for an adequate supply of aluminum sulphate either with or without the alkali necessary for coagulation. The unit is simple to operate and easy to maintain and the volume of floc, which is of a stable nature can readily be increased or decreased.

The floc producer is particularly valuable on waters in which the floc forms with difficulty. It also is applicable to many trade wastes.



Top view of Alhydro tank showing plate assembly

The Alhydro Floc Producer claims many advantages over the customary coagulants used in water purification. The aluminum hydroxide formed is not influenced by the temperature of the water, the acidity, or the alkalinity. Since the aluminum hydroxide has no sulphate ions tied in with it the treated water is not on the acid side thus eliminating any need for corrective chemical conditioning.

Jones Markets Propeller Type Agitator

A new propeller-type agitator designed for materials having consistencies up to four percent is now being manufactured by E. D. Jones & Sons Company, Pittsfield, Mass.

Anchored in the wall of any chest or tank, this cartridge type unit is complete and compact. Built of non-corrosive stainless steel and bronze in various propeller sizes to meet particular chest dimensions, it requires 5 to 15 hp. It is furnished with an electric alarm system which sounds a warning if the water supply which lubricates the laminated plastic bearings should fail. Descriptive literature available from manufacturer.

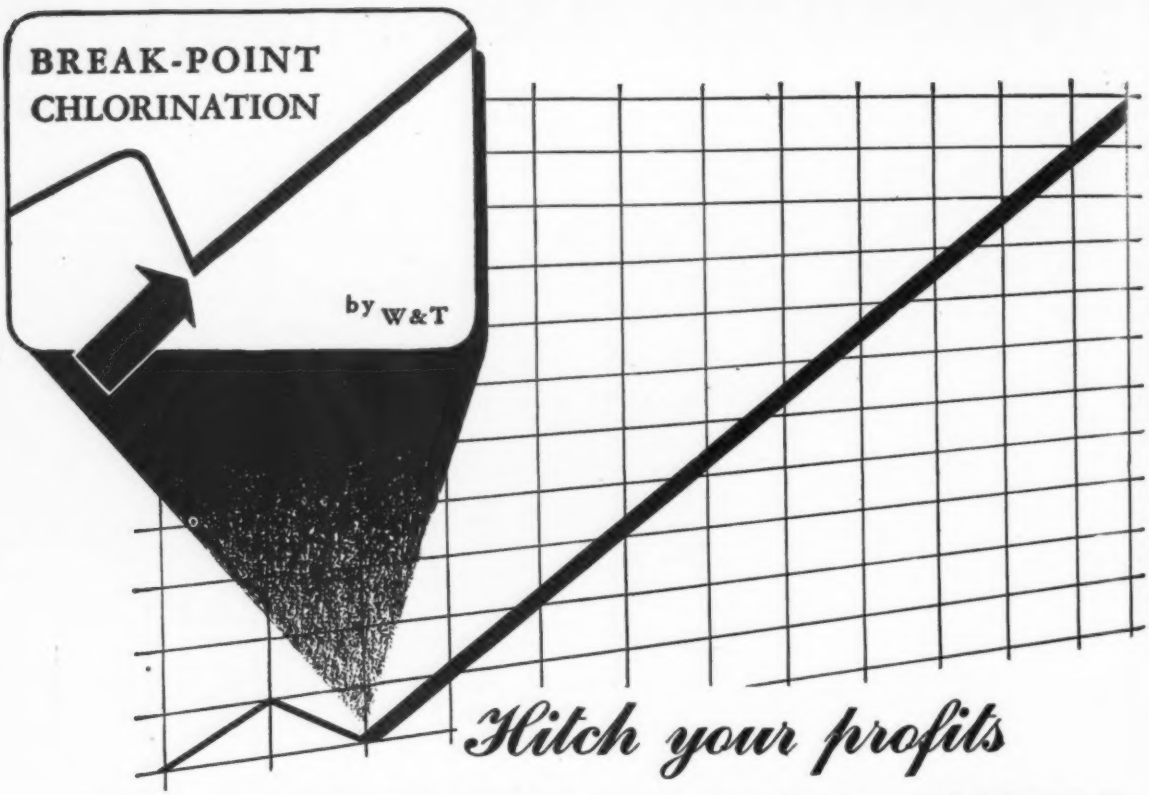
Dustless Packing Material Made With New Shredmaster

An all-purpose shredding machine which turns out packing material in the form of long dustless strips of paper 1/32 inch wide or any desired multiple thereof, is being introduced by the manufacturers, Shredmaster Corporation, 205 Willoughby Avenue, Brooklyn 5, N. Y.

Newspaper being fed into the Shredmaster and turned into packing material without dust, litter or noise.

The Shredmaster cuts rolls of paper, wax, tissue and cellophane automatically, also newspapers, labels, premium packages, and office waste, such as accounting records, business machine cards and confidential paper. The shredded paper so often seen as protective or fancy packings for perishable articles like gifts, fruit, china, glassware, and bottled goods, and as display material for meats, soaps, cosmetics and Easter packages can now be made in this way without litter or noise. Other uses for the machine are the shredding of foil, rubber, leather, textiles, tobacco and fruit peels.

Illustrated leaflet on Model 1000 pictures shredding of waxed paper and newsprint for packing material, also provides specifications.



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SECTION OF THE

TECHNICAL ASSOCIATION
OF THE PULP AND PAPER INDUSTRY

122 E. 42nd ST., NEW YORK 17, N. Y. Edited By R. G. MACDONALD, Secretary

Colloidal Equipment Applied to the Homogenization of Clay and Paper Coatings*

By David E. Gould[1]

Abstract

The mechanics of homogenizing mixtures of normally incompatible liquids and insoluble solids are discussed and a description is given of several types of equipment used.

The mechanics of homogenizing mixtures of normally incompatible liquids and insoluble solids are primarily concerned with the reduction in size of relatively large masses to smaller fragments of definable sizes. At one extreme there are coarse suspensions in which the particles are visible to the naked eye, and at the other extreme true solutions in which the particles are subdivided to such an extent that they are not visible, even when viewed through an ultramicroscope. Between these two limits all possible degrees of subdivision are possible, and it is difficult to draw the line between true solutions and colloid solutions on the one hand, and between colloids and suspensions on the other.

Ultramicroscopic determinations have indicated the particles of matter in the colloidal state may range in size from 4×10^{-6} to 4×10^{-8} inch diameters. At the lower end of the scale is the boundary between the colloid solution and the true solution, at the upper end the boundary between the colloid solution and the coarse dispersions—the suspensions and emulsions. An indicative chart demonstrating this inter-relationship is as follows *(1)*:

Particles	Diameters
Molecules—not visible with ultra-microscope	1.95×10^{-8} to 1.95×10^{-7} in.
Sols—apparently homogeneous, but visible with ultramicroscope	1.95×10^{-7} to 3.9×10^{-6} in.
Suspensions—seen with ordinary high power microscope—turbid	9.75×10^{-6} in. or larger
Suspensions which settle out on long standing—seen with small lens	3.9×10^{-5} in. or larger
Suspensions which settle out quickly—seen with the eye	3.9×10^{-4} in. or larger

The primary object in any coating operation, whether it be for the purpose of sizing, waterproofing, stiffening, over-coming transparency, lubrication, or glazing, "is to produce a sheet with an even, semiabsorbent surface for printing, and this is effected by covering the fibers on the surface of the paper and filling the hollows between them with finely divided mineral matter, mixed with an adhesive or size. This, after calendering, results in a smooth even surface *(2)*.

The finer the reduction in particle size of the coating material, the greater the covering power and adsorption of the pigment upon the interstices of the paper. Recent developments in the study of the measurement of surface areas of finely divided or porous solids by low temperature adsorption isotherms *(3)* have given this mathematical equation:

$$\text{Surface Area} = \frac{6}{p\,d3}$$

where p is the density of the solid particles and $d3$ is the the average particle size.

Peptization

There are two general methods for preparing particles of colloidal or near colloidal dimensions. One of these is to coalesce single or groups of molecules to larger aggregates, and the other is the disintegration of large masses to the desired fines. Of the two methods, the latter is more generally applicable in manufacturing and industrial techniques. This latter process, breaking large particles down to smaller ones, is called peptization.

Peptization may be accomplished in many ways, some of which may be enumerated as follows: (1) grinding, (2) dispersive action of chemicals, (3) dispersion by electric arc, (4) solution in water or suitable solvent, or (5) supersonic vibrations.

The process of grinding, supplemented in some cases by (2) and (4) is, by far, most generally used. Variously designed equipments are available for this purpose, classified as coarse crushers, intermediate crushers, and fine grinders depending upon the work which they can accomplish.

The largest "Blake" type jaw crusher will handle rocks up to 60 inches in diameter, producing material approximately 1 inch in diameter. The intermediate crushers—the crushing rolls, stamps, and hammer mills will handle material as coarse as 1 to 2 inches and as fine as 40 to 60 mesh, producing particles ranging from ⅛ to ¼ inch diameter and as fine as material approximately 100 mesh. The so-called fine grinders, the Buhrstone, the roller, pebble, ball, and tube mills are rated to produce material 100% through a 200-mesh screen, equivalent to particle sizes as low as 1.5×10^{-3} inch diameter.

The primary disadvantage to this type of equipment for the production of fines through a 325-mesh screen is their large initial power imput and their relatively

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[1] Chief Chemist, Eppenbach, Inc., Long Island City, N. Y.

long operating cycle. Whether one agrees with Rittinger's or Kick's law, as applied to the amount of energy necessary for the crushing process, it is generally applicable, as derived from these laws, that the energy required is directly proportional to some function of the ratio of the initial and final diameters produced.

It is evident that "whether crushing and grinding follow Rittinger's or Kick's law, the power is largely consumed in crushing the finer particles" *(4)*. What may be said then as to the efficacy of this type equipment as concerned with the efficient production of particles of colloidal or near colloidal sizes.

The colloid mill was designed to overcome these objections of relatively low operating efficiency in the production of near colloidal fines. The engineer Plauson is given credit for the popularization of the principle of hydraulic impact as a force resulting in the production of colloidal particles, and stated that colloids may be produced as a result of the impact stresses created by the action of high speed rotors rotating at peripheral speeds of 100 feet per second, catalyzed hydraulically upon a thin layer of suspension. The various types of colloid mills produced in the past 20 or so years have been designed to utilize this principle, and contain modifications in design to implement or supplement the creation of impact stresses by means of specially designed rotors and stators which add smearing, shearing, and crushing forces to the total energy acting upon the processed material. These colloid mills are to be differentiated from the so-called homogenizers which act to produce peptization of material by means of positive high pressure feed through narrow apertures and nozzles, utilizing pistons, and plungers as driving rods to move the material.

Emulsions and Dispersions

The colloid mill will fail in certain cases to produce collodial systems, in such instances generally producing systems of turbidities, or "cloudy dipersions", a stage roughly lying between that of colloids and true suspensions. Authorities agree that "insoluble substances which are not hydrated or solvated, in other words, solid nongels, do not permit the attachment of adsorption layers (solvation shells) about themselves, one of the requisites for peptization of solid substances to colloids" *(5)*. "It is important in this connection to use as peptizers only substances "which are polar and relatively slightly active". "Solvates, on the other hand, form sols, but require as peptizers very active molecules having the power to form true compounds which can fasten themselves to the particle surface" *(5)*.

Techniques and materials used for the application of coatings to the surface of paper have improved considerably since 1880 when it was considered good practice to apply a thin layer of clay and glue slurry manually over the surface of a web of paper which was then dried and calendered *(6)*. Special emulsions and dispersions have been developed permitting greater facility in controlling the degree of penetration and the thickness of the layer of the special coating material used to cover the surface of the paper. Dispersions and emulsions have made it possible to dilute the effective coating agent with inert, volatile liquids, which evaporate off leaving behind an extremely uniform and well dispersed layer of the active coating material. Clark and Sutermeister *(2)* lists the essentials for any coating mixture as follows: mineral matters, white pigments—clay, blanc fixe, satin white, precipitated chalk, lithopone, TiO_2, alumina, and talc.

Colored pigments—ultramarines, umbers, siennas, ochers, lakes and etc.

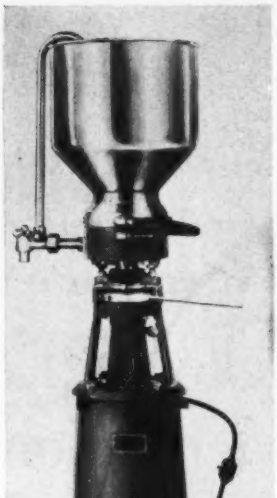

FIG. 1
Vertical Colloid Mill

Adhesives (sizes)—casein, glue, starch, gums

Waterproofing agents—shellac, Manila gum, formaldehyde

Special materials—dyes, lakes, pigments, powdered metals, alkalis, softening agents, defoamers, and wetting agents.

Too much clay or pigment will weaken paper *(6)*, so that the control of the amount of coating material used to surface the paper is highly important. This may be most readily controlled by dispersing the active ingredients in suitably prepared emulsions and dispersions in which case the amount of active ingredient may be suitably diluted with inert liquids and solids.

Colloidal Mill

The standard coating mixtures containing clay, satin white, titanium dioxide, and other pigments, suspended in a vehicle of casein rendered insoluble by a suitable insolubilizer, may be readily processed through a colloid mill, utilizing either a gravity feed into the hopper of the mill, or direct pressure feed running off a pressure pump into a special pressure head leading material directly into the grinding area of the mill. In general, gravity feed using the hopper of the mill may be advantageously used with lower viscosity materials, from 1 to 30,000 centipoises, with better processing results in the lighter viscosity ranges. In the higher viscosity ranges from 10,000 to 40,000 centipoises, a pressure feed utilizing the pressure head, will yield higher production rate of flows at lower micrometer settings in the mill. It is well to control the pressure of material feeding into the pressure head of the mill to 35 to 40 P.s.i. by means of a suitable by pass arrangement, and pressure gage and valve.

This colloid mill has been developed over a period of more than 20 years to meet the needs of the many industries for low cost operating equipment capable of producing suspensions and emulsions of colloidal or near colloidal sizes. This series of mills contains features unique to this type of equipment and are enumerated as follows: turbulizing action of top turbine, high pressures created by built in centrifugal pump, mechanical shear

by teeth in rotor and stator,fine clearances, adjustable during operation, hydraulic shear by smooth surfaces in rotor and stator, efficient water cooling jackets capable of controlling temperature increments to 1 to 10° C., adjustable micrometer settings, and recirculating by-pass system permitting material to be recirculated in grinding head as long as desired without discharging from the mill.

These mills are stock in a series of units ranging from the small ¼-hp. laboratory size to the large 10-hp. production units, with intermediate gradations of ½, 1, 3, and 5-hp. mills. For special appliations requiring larger horsepower they may be furnished with 15, 20, and 25-hp. motors. Contact parts are fabricated from hardened stainless steels up to 55 to 60 Rockwell, and may be surfaced for additional wearing resistance with special alloys. They are also provided in a special series of base mills in which the motors are not mounted directly under the grinding chamber, but are coupled to the rotor shaft by means of a completely enclosed base belt drive. The normal operating speeds for both series of mills are 7000 r.p.m. in the fractional and 1-hp. units, and 3600 r.p.m. for the larger production models. These speeds may be varied in the special base belt drive mills by altering the gear ratio at each end of the pulley system.

Processing through a colloid mill presupposes the prior preparation of a suitable premix. It is apparent that systems containing two or more immiscible phases will tend to separate into their component parts at some rate dependent upon the difference in specific gravity and viscosity of the phases. Liquid-liquid systems are called emulsions, liquid-solid systems suspensions or gels (dependent upon which of the phases is the disperse phase.) The standard coating mixture, containing as it does suspended pigments in a vehicle consisting of an emulsion of oil and water, is a complex system which must be properly formulated and adequately processed in order to achieve uniformity of components and stability of the immiscible phases. These conditions are essential since they are prerequisite to the final processing resulting in reduction of particle size and homogenization. Failure to achieve this uniformity and stability, for the span of time necessary to encompass the mechanics of processing the entire batch through the colloid mill, can result only in varying composition of material feeding into and out of the colloid mill, and varying degrees of homogenization dependent upon the nature and composition of the material actually present in the mill at any given time.

The considerations then are three-fold.

1. To formulate the mixture to contain the proper proportion of oil, water, and emulsifying agent to form a stable emulsion, and the addition of a suitable dispersing agent to give the desired stability and flow characteristics to the pigment suspension. This includes such factors as pH control, prevention of the formation of flocculants, order of addition of ingredients, etc.

2. To adequately mix the ingredients and achieve a uniform mixture, sufficiently stable to facilitate additional processing. This includes the choice of proper mixing equipment as well as suitably designed containers to correlate the action of the mixer with the mechanics of the heating, cooling, and discharge cycles of the processing period.

3. To homogenize the resultant mixture, reducing particle sizes of the oil and water emulsion, as well as the mineral matter dispersion, to fines of colloidal or near colloidal **sizes.**

The primary purpose in any coating formulation is to incorporate the active ingredient or ingredients in sufficient concentration to properly surface a given paper, board, or cardboard. The nature of the ingredient or ingredients will vary in accordance with the desired performance specifications of the given paper or pulp stock. An understanding of the specifications and intended use for the finished paper stock is essential preliminary to the formulation of any coating; whether the finished paper is to be used for fireproofing, waterproofing, insecticide aid, printings, engravings, embossings, labelling, and packing will determine the nature and contents of the coating formulation.

The principles inherent in the manufacture of these coating emulsions and dispersions are well understood and identical with those concerned in the manufacture of miscellaneous similar preparations used in other industries. Emulsions are either preparations of oil in water, or water in oil (the term oil referring to any liquid other than water and insoluble in water), water in one case being the external phase, in the other the internal phase .Emulsions of two immiscible liquids other than water are also feasible, but they are not generally applicable in this discussion.

The oil-water type emulsion is most generally used in the formulation of coating preparations. These are water soluble type emulsions and are easily handled permitting ready cleansing of equipment. Since water is the external phase, it may be easily volatilized during the calendering process, leaving behind the surface acting coating material. The writer knows of no specific water-oil type coating preparation, whether this type is used is problematical, although it may have its applications.

Dispersions of pigments into these emulsion vehicles may be stabilized by use of various wetting and / or dispersing agents. These so-called deflocculating agents either act to coat each individual particle with a surface of a protective colloid material preventing coalescence, or establish forces on minute particles "so that they are constantly repelled and thus prevented from re-combining and forming agglomerates" *(7)*. The most outstanding example of the former application is the use of the silicates of soda as deflocculants. "Silicate of soda is a chemical that the paper mill can use for a number of different purposes; coatings, adhesives, sizes, coagulant

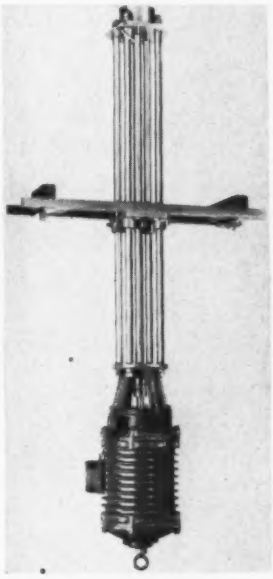

FIG. 2
Production Model Turbine Type

aids for water clarification, and savealls" *(8)*. These chemicals vary in physical and chemical properties, and the exact compound used, as well as the physical state of the compound-solid, liquid, or powdered, best applicable to a specific coating problem depends upon the nature of the desired coating.

An interesting dispersing agent which functions by establishing repellent forces upon individual particles is a Tamol P preparation. This material is a neutral sodium salt of a condensed aryl sulfonic acid, readily soluble in water. It acts to wet and disperse solids, without materially lowering the surface or interfacial tension between the oil-water phases, thus minimizing frothing and foaming. This agent very markedly lowers the viscosity of water dispersions, increasing the flow characteristics of pigment suspensions. It is very successful in reducing the viscosity of clay slurries, 0.5 to 1% Tamol P by weight of the dry pigment usually sufficing to produce a stable and fluid dispersion.

Establishing a suitable formulation in the laboratory is quite different from duplicating it in a plant process. The painstaking attention to detail and scrupulous care manifested by the chemist may be extended into a large plant operation with the aid of efficient and properly designed equipment. The advantages inherent in the use of emulsions and dispersions as a means of applying an active ingredient in even and controlled coatings have spurred the design of specialty mixers and homogenizing equipment.

Turbine Type Mixer

It has long been recognized that the turbine type mixer has certain definite advantages over all other types of mixing equipment. Authorities state that "turbine mixers surpass all other types in speed of mixing and dissolving and in intimacy of mixing". Their power consumption is not excessive, being as a rule considerably lower than that for propellers." "They are entirely satisfactory on materials of all consistencies or apparent viscosities . . . and on batches of all sizes." "Because of their speed and thoroughness, they are the best type for continuous mixing or dissolving operations *(9)*. Since they operate on centrifugal principles, they are true dispersers and are very efficient for the production of intimate dispersions in batch or continuous process.

The Eppenbach homo-mixer was first designed in 1936, and tested thoroughly for a period of several years by selected concerns before release for general use by the processing industries. Its immediate acceptance and enthusiastic endorsement by many industrial concerns has justified the principles of design upon which the mixer is based. Its simplification in construction has encouraged competitive designed equipment, its leadership in the mixer field is established.

This unit incorporates the essential features of the turbine mixer. It consists of a high speed shaft rotating at 7000 r.p.m. in the smaller models, and at 3600 r.p.m. in the larger models, driving a specially designed rotor at high peripheral speeds (in all models in excess of 50 feet per second.) through fixed clearances between the edges of the rotor and the inside wall of the stator housing. It has the essential features of the colloid mill, in that all materials passing through the fized clearances are subjected to intense hydralic shear by the rapidly moving wall of rotor metal. Flow patterns are created in a liquid mass forcing continual movement of all material in the mixing kettle in vertical planes, preventing stratification. All mixing is initiated by the mixer head at the bottom of the container, surface boil and vortex being minimized by an adjustable baffle plate.

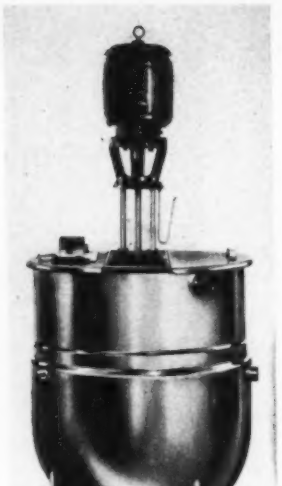

FIG. 3
Turbine Type Mixer and Kettle Combination

The action of the high speed rotor creates a liquid layer of high kinetic velocity immediately tangent to the mixer head. This layer of liquid has a higher velocity than any other section of liquid in the container so that it is an area of low pressure. The continuous pressure differential created by the rotor tends to force the contents of the mixing vessels continually through the mixer head. This is done with a minimum incorporation of air, even at maximum operating shaft velocity.

These mixers, like the colloid mills, are supplied in fractional horsepower laboratory size units. These are the ¼ and ½ horsepower units, which are supplied additionally with control rheostats permitting regulation of the speed of the shaft from 0 to 7000 r.m.p. They are provided in larger models, ranging from 1 to 25 hp.

The capacities of these mixers are rated in accordance with the physical characteristics of the mix, such factors as viscosity and specific gravity determining the optimum operating capacity. The 1-hp. unit is illustrative and is rated to process up to 50 gallons of mix in a viscosity range from 1 to 500 centipoise. In a viscosity range between 500 to 2000 centipoise, the 1-hp. unit will adequately handle 35 to 40 gallons. Between 2000 and 6000 centipoise, this mixer will handle approximately 30 gallons of material. At higher viscosities, increasingly smaller amounts of material may be rapidly mixed with this mixer. These figures refer to materials which possess true body or viscosity, and not to thixotropic or plasticity materials. Thixotropic and plasticity materials will suffer reduced viscosities as a result of the high speed shear created by the rapidly revolving rotor.

The mixers may be adapted to continuous processing

by being installed into so-called "pipe line homo-mixers", which may be installed into any pipe line. These may be provided with several mixing heads revolving off the same shaft, thus increasing the surface area of mixing action. They are also supplied with stainless steel, steam jacketed and water cooled kettles.

Several illustrative coating preparations are quoted, illustrating the use of the turbine-mixer and colloid mill" *(10)*.

1. Ten parts of soya bean protein are treated with 0.7 parts of Na_2CO_3 by heating to 60°C. under agitation with 60 parts of water. To this is added 5 parts of emulsifier (ammonium oleate, gum arabic, sodium stearate, and etc.) To this mixture is added 40 parts of molten paraffin, under vigourous agitation. The mixture of casein,emulsifier, and paraffin is stirred with a high speed mixer for approximately 15 minutes. It is then diluted with 1000 parts of water at 60°C, and finally processed through a colloid mill.

2. A silicate of soda syrup is mixed with 65% water. The remaining 35% of water is used to dissolve the alum. Glue, or gum is then stirred into the diluted silicate of soda, under vigorous agitation. Thirty-three percent of paraffin wax by weight is melted and the silicate of soda solution containing the sizing is added under vigourous agitation, finally the alum solution is added. The temperature of the mix is maintained at 170°F. The resulting emulsion is then homogenized by passage through the colloid mill.

3. A paraffin emulsion containing paraffin wax, montan wax, silicate of soda, alum, and water is prepared, utilizing the turbine mixer. This emulsion is then diluted with water and silicate of soda stirred in. A 60% latex solution is then added and the entire mass homogenized with the mixer, and optionally with the colloid mill.

Paddle Mixer

The mixing of heavy slurries and viscous mixtures has been considerably facilitated by the recent development of the Eppenbach Agi-mixer which includes the mixing action of a double motion paddle mixer equipped with scraper blades in addition to the turbine mixing action of the homo-mixer. This mixer is furnished with a sanitary type completely enclosed gear box and may be furnished with or without a stock steam jacketed kettle. It is designed so that the paddles may be operated independently from the mixer and vice versa, and is excellent in applications involving the manufacture of emulsions in which there are changes in apparent viscosities during the manufacturing process. For example, it may be used either with or without the paddle mixer in the formation of the primary emulsion, at which point it may be shut off and the paddles operated during the draw-off period. The action of the paddle mixer and scraper blades is such as to prevent encrustation of material along the walls of the kettle during the heating or cooling periods and to facilitate the action of the mixer in keeping the contents of the kettle in complete and continuous flow.

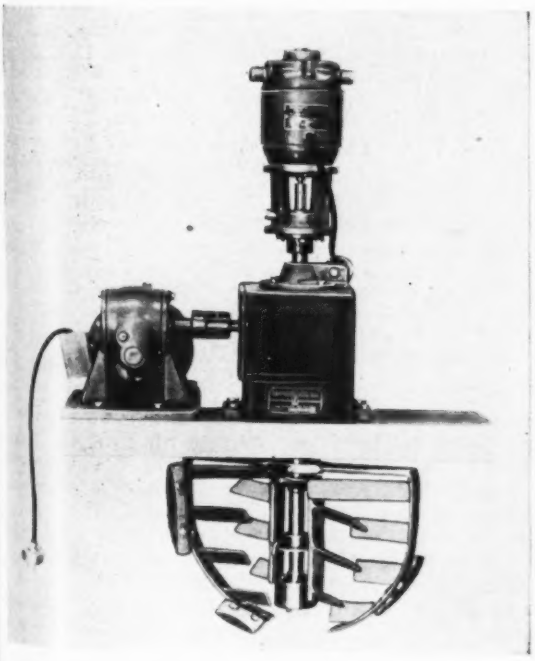

FIG. 4
Mixer with Turbine Mixer plus Paddle Mixer

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New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

Sydney G. Berry, Patent Lawyer, Moses, Nolte, Crews & Berry, New York 18, New York, a 1916 graduate of Columbia University.

Walter J. Brand, Laboratory Supervisor, Westfield River Paper Co., Inc., Russell, Massachusetts, a 1929 graduate of Western State College, with an M.S. degree from Lehigh University in 1932.

William P. Campbell, Director of Development, Hercules Powder Co., Wilmington, Delaware, a 1936 graduate of the University of Maryland with a Ph.D. degree.

Carleton L. Colbath, Groundwood Superintendent, West Tacoma Newsprint Co., Steilacoom, Washington.

Howard W. Duggan, Chief Engineer, Stebbins Engineering & Manufacturing Co., Watertown, New York, a 1927 graduate of Union College.

Leonard C. Fitzgerald, Sales Representative, Shryock Brothers, Inc., Philadelphia, Pennsylvania. Attended Miami-Jacobs College.

Bernard C. Gallagher, Sales, Robert Company, New York 14, New York, a 1938 graduate of Pratt Institute of Technology.

Hermann Heckel, Chemist, Champion Paper & Fibre Co., Hamilton, Ohio, a 1924 University of Illinois graduate, with a Ph.D. degree.

Arthur P. Wirpsa, Chief Chemist, Racquette River Paper Co., Potsdam, New York, a 1937 graduate of the New York State College of Forestry.

Nelson R. Yorke, Research Chemist, Panelyte Division, St. Regis Paper Co., Trenton, New Jersey, a 1941 graduate of Polytechnic Institute of Brooklyn.

Clell E. Tyler, Chief Chemist, Hercules Powder Co., Brunswick, Georgia, a 1929 graduate of Purdue University.

Cola G. Parker Addresses Lake States TAPPI

Cola G. Parker, president of the American Paper and Pulp Association and president of the Kimberly-Clark Corporation, was the speaker at the April meeting of the Lake States Section of the Tchnical Association of the Pulp and Paper Industry. He was heard by more than one hundred and twenty TAPPI members and guests when he spoke at the dinner meeting in the American Legion Club House in Appleton on April 13.

The first part of his talk dealt with the present economic status of the industry. It is Mr. Parker's opinion that paper supply and demand are essentially in balance, except in the case of newsprint and a few other items which show less distress than a short time ago. He pointed out that the industry is still engaged in the greatest expansion of all time and that the industry can produce 23,000,000 tons of paper and paperboard this year and end the year with a capacity of 23½ million tons. If imports continue at the rate of 1947, and if demand requires it, there could be 27 to 27½ million tons of paper and board available in the country, allowing an apparent per capita consumption of 370 pounds in 1948 as compared with the record of 342 pounds in 1947.

In continuing, Mr. Parker remarked that the actual production will depend upon demand which in turn will depend on the state of general business. He is not pessimistic about the production of paper in 1948. Mr. Parker noted that inventories may be growing more rapidly than in 1947, which may be taken as a danger signal.

Mr. Parker made clear that his remarks were based on the assumptions that we will not be at war and that Congress will not reinstate wartime controls.

In passing on to the second division of his talk, Mr. Parker noted that every member of TAPPI, in one sense or another, is engaged in development activity, and, therefore, should know that industrial development does not take place without capital goods and that, therefore, there is a particular need for risk capital. He said, "Because we operate within the confines, as well as with the benefits, of a money system it is not easy to avoid the dollar sign in any discussion such as this. But it is the simple, basic elemental fact that what has produced our tremendous wealth as a nation, our superior standard of living, has been the ever more efficient use of human effort through its application by means of tools which is merely another word for capital. And in all of the wide dispensing of our national income, substantially all payments are made either for human effort, physical or mental, or for tools.—National resources are, of course, important, but they are inert until human effort plus tools makes them of greatest use."

Mr. Parker's plea is for understanding and help in spreading the understanding of the system which permits our way of life. Because of our new adventure in foreign policy, with the consequent tremendous increases in government spending, it is vital that we examine the path we are travelling, assess the inherent dangers, and minimize them if possible. The high cost of government, which has now reached an all time high of 31 cents out of every dollar of our national product, makes it more and more difficult for industry to acquire the risk capital for better tools which can aid in lowering prices and increasing real wages. It has been demonstrated that the constant increase in government take can only lead to complete government ownership. "History has demonstrated," said Mr. Parker, "that government ownership of all producing facilities results merely in reducing and not increasing the standard of living." Continuing, he singled out two aspects of the problem for further comment. One was the matter of social security. He said, "Obviously, when the government takes these funds from employer and employees, it cannot and will not, use the funds for the expansion of production. They are now used to pay its day-to-day bills and the fund becomes merely a pile of I.O.U.'s. Had the same amount been put in private pension plans, it would have been largely invested in business enterprises and have helped to supply the ever-increasing volume of tools needed to improve our production and thereby make more things available to all of the people."

The last point in Mr. Parker's talk was the matter of the tremendous sums being spent by the government. He pointed out that we can have all the government service for which we are willing to pay, but that we all pay for it; it is not the other fellow alone who pays. Each person must realize the amount he is actually paying for government service and decide whether he wishes to continue to buy such service at such a price.

Those in attendance included: A. P. Adrian, Ed. P. Arpin, Jr., A. W. Asmuth, Jim, Asmuth, J. Atchison, L. R. Ayers, C. O. Baetz, Arnold G. Beaman, A. P. Bellinghausen, H. A. Bergerson, Chester W. Bland, Gervase C. Blick, Peter B. Borlew, Paul Boronow, G. J. Brabender, B. L. Browning, James P. Buchanan, M. A. Buchanan, E. D. Canaga, Glenn Carroll, George Chamberlin, Neil H. Christian, T. Collins, V. G. Cornelius, H. C. Crandall, D. W. Davis, R. F. DeLong, R. A. Diehm, H. P. Dixson, E. F. Douglass, Jr., H. A. DuBois, R. F. Dunger, Geo. C. Fannon, Wm. A. Fannon, E. P. Frieders, Carl Gelbke, John P. Gerhauser, John H. Graff, Bill Grimes, John Grimes, Jos. P. Haberman, Don Hagerla, H. H. Haldeman, Paul B. Hansen, John A. Hanson, H. Hartwig, John M. Hayes, A. M. Heald, Merle Heath, Lee Heroman, T. A. Howells, L. J. Johnson, William S. Kennedy, R. S. Kolasinski, Franklin Ku, G. T. Latham, Alex P. Laux, N. L. Malcove, George E. Martin, S. H. Mathews, Miles R. Meidam, Earl L. McCabe, H. C. Niles, R. A. Nugent, David F. Petersen, A. Phillips, Orville H. Ross, Joseph Rossman, Herb Rowe, Robert S. Sage, Fred Sanders, G. R. Sears, Ruth Shallcross, Joe Shimp, L. A. Shipman, E. H. Shriver, L. E. Simerl, R. E. Smith, R. G. Smith, Stephenson Smith, W. Spearin, Clyde W. Steele, A. W. Stompe, R. E. Strauss, M. J. Taylor, Carola Trittin, Paul E. Truttschel, S. Roy Turner, E. Voigtman, Charley Wagner, H. D. Wake, Frank R. Walsh, S. D. Wells, C. J. West, C. J. West, Jr., Roy P. Whitney, Karin Wilson, J. C. Wollwage, C. Youngchild.

Lake States TAPPI To Meet

The TAPPI Lake States Section will meet at Wisconsin Rapids on Saturday, May 15th. In the afternoon there will be a tour through the Griffiths State Nursery. The Nekoosa-Edwards Paper Company will show some of their older plantings which exhibit unusual growth rates due to the establishment of favorable conditions. In the evening, at the Bull's Country Club, Fred Trenk of the University of Wisconsin will talk on "Pulpwood Production from the Standpoint of the Small Timberland Owner of Wisconsin." Russell Cunningham of the Lake States Forest Experiment Station. St. Paul, Minn., will talk on "Pulpwood Resources in the Lake States Area With Reference to Allowable Drain and Actual Drain by Species."

An Approach to Industrial Education*

By F. A. Olmsted[1]

Abstract

The plans followed by the Crown Zellerbach Corporation to afford employees of all levels with opportunity for voluntary self improvement are presented.

These include conferences, subscriptions to specialized services, membership in the Training Within Industry Foundation providing training in job instructions, job methods and job relations, a course in conference leadership, provisions for general information through a booklet which is given to every employee, instructions in safety and first aid, the Crown Willamette Paper School, extensive use of motion pictures, a system of rewards for worthwhile suggestions, and a liberal policy providing for participation in the profits from patentable inventions.

Benefits from the program are realized not only by those who take advantage of the opportunities offered but by the whole body of employees and by the corporation. The results in industrial relations and in public relations are worthwhile and far reaching.

It is traditional in America that latent ability, spurred by ambition and industry, makes it possible for most anyone to attain real success in his chosen field. Most people recognize that some backwoods boy may become another Lincoln, that some humble immigrant lad may develop into a Carnegie or a Steinmetz, that some presently underprivileged youth in an industrial community may turn out to a Ford or an Edison. However, no matter how bright the flame or warm the desire within them, any number of hopeful careers will wither on the vine unless given the sunlight of opportunity and the rains of experience.

To provide such opportunities for achievement should become the proud privilege and responsibility of industrial corporations. There is nothing paternalistic about offering the opportunity for encouragement to ambitious employees. As a matter of fact, it will add up to good business when employees generally recognize that within their company, the ambitious and resourceful among them need not look to greener pastures for opportunity; need not change employers in order to gain advancement or recognition for results already achieved.

All of us should be alert to the possibility that some great business executive of tomorrow may be starting to work for us today in some insignificant job somewhere in the mill, the office, the forest or elsewhere. It should be our job to see that he identifies, develops and holds his place in our organization, rather than feel that his efforts are wasted. In short, we must see to it that he has the opportunity to learn and develop his native abilities with us, rather than moving across the street to the plant of a competitor.

In preparing this paper on employment education, it is not my purpose to hold Crown Zellerbach up as the acme of perfection, nor to try and convince you that currently used educational techniques were all company inspired. Actually, some of the more important educational ventures, on which we are now well embarked, came as the result of requests by employees themselves that certain facilities be provided. The program is by no means perfect, or complete. We do have the comfortable feeling that it is working, and that we have plenty of room in which to grow. Constant efforts are being made to improve it. Tomorrow's program likely will differ widely from today's, yet we know that certain fundamentals have been well established on which we can safely build. The author would suspect, therefore, that future changes are likely to be in the direction of refinements and additions to present activities, rather than radical changes from what are already known as acceptable and workable techniques.

Recognizing that man's education is never complete, it becomes self-evident that opportunities for personal improvement are needed all along the line—from the sweeper to the president of a company. The trade school does not fully meet the situation. Mere job instruction or elementary training are not sufficient. Additional educational facilities in some form must be made available to meet the varying needs of the employee at every level. Furthermore, to obtain the most far-reaching results from the educational facilities offered, acceptance by the employee must be largely voluntary.

All will recognize that there are some basic qualifications necessary for any upgrading in employment. However, the real element necessary for recogition and advancement lies in an employee doing things which are not rquired. In other words, opportunity is more likely to knock at the door of the man who does more on his job than the contract calls for.

Program

In our program, some types of instruction are equally available to all employees alike. Some are restricted by the geography of our company, whose operations extend from New York to the Golden Gate, and from the extreme Northwestern tip of Washington State to the Gulf of Mexico. Some instruction opportunities are more strictly related to the particular field in which his ambitions lie. Still others are for those who have already made substantial progress and have attained the stature of supervisors and foremen. Always there is room for education for those at the top—for those in management and executive positions. Few study harder than those with most responsibility. Meetings of division managers and department heads with corporate executives afford a host of opportunities for the exchange of ideas and for attaining an increased and fresh understanding of management problems in a swiftly moving and complex economy. These studies may range from human relations to a sudden change in customer requirements for a product; from the attitude of the public towards business in general to how best to guarantee a wood supply 75 to 100 years from now. In addition to native abilities and accumulated experiences within this executive and management group, subscriptions to specialized services are available—and what is more important, are used.

Of great benefit to executive, management and supervisory staffs is the company's annual management conference. Two or three days are taken from the year for serious discussion of corporate affairs, the locale

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 23-26, 1948.

[1] Member TAPPI; Asst. to Vice President, Crown-Zellerbach Corp., San Francisco, Calif.

preferred being away from other interruptions. Twice it was held in snowbound Timberline Lodge on the side of Mount Hood in Oregon. At these conferences, executives discuss internal affairs with frankness, then invite discussion. Forestry and product exhibits acquaint all those attending with major corporate activities. In one instance, all who attended a management conference were taken on a 115 mile motor stage trip through one of the large tree farms of the corporation. On this trip they learned not only about road building, bridge building, logging, tree farming, and other forestry matters, but they were told the reasons why certain things are done in a certain way. All came home with a fuller understanding of the timber activities.

For a year now, 650 members of the executive, management and supervisory staffs have been receiving a four-page, frequently issued publication which is titled "Management Digest." The digest aims at providing authentic, up-to-the-minute information about new developments, changes, and progress in the company and in the industry. Some of the information is confidential, but mostly is of such a nature that the supervisors find it helpful in passing on corporate news to their department employees.

Our corporation has its own industrial relations staff, which constantly provides a wide variety of data and services for use by management and supervisory groups. In addition, the corporation avails itself of membership in the Training Within Industry Foundation, an outgrowth of the Training Within Industry program which was so effective in wartime. This foundation has widened its peacetime usefulness by offering training techniques to group leaders in the effective handling of employees.

Training Within Industry

The Training Within Industry (or TWI) program recognizes that any man who is responsible for the effective operation of a group must have knowledge of their tasks and skills in order to secure the most effective cooperation and production by that group. TWI is primarily concerned with development of skills which it briefly designates as skill in instruction, skill in methods and skill in leading others.

TWI has three branches: Job Instruction Training, or JIT; Job Methods Training, or JMT; and Job Relations Training, or JRT.

Thus far we have had more experience with Job Instruction Training than with the others, but we have moved far enough with Job Methods Training to be assured of its benefits to both the employees and the corporation.

In the case of the Job Relations Training, our experience is still quite limited. There is a general feeling, however, on the part of both our supervisors and management that the whole program of the TWI Foundation is highly beneficial to those who participate.

The procedure followed in developing our JIT program may be worthy of some further discussion here.

The first step in any of these TWI plans is to develop a few trainers who will then be able to conduct classes for supervisors and instructors to carry on the instruction in the mills. For this purpose, members of the TWI Foundation staff put on institutes at which groups of eight to ten men, selected from among the supervisors in different divisions and from members in other industries for their qualifications to handle work of this character, are given an intensive course of instruction. This includes the art of conference leading, and the use of the TWI Manual for TWI courses.

The manual is an outline of five 2-hour sessions that the leader, thus trained, conducts for supervisors or others responsible for personnel training at the plant where he is employed. The TWI program contemplates a further follow-up from time to time by members of the TWI staff of the work done by their trainees in putting on their own sessions, and conducting classes in their mills.

In the job instruction course, the approach is to demonstrate how to get employees to learn to do their respective jobs correctly, quickly, safely and conscientiously. Men are taught how to analyze a job, and to test each element for the key points which will make or break the job, injure the worker, or make the job more easily accomplished.

That the plan works has been definitely demonstrated. One or two specific cases might be mentioned by way of example.

In one of our mills, the supervisor of the woodmill, who has taken the JIT course, now makes it a point when breaking in a new employee to first take him through the entire woodmill operation, showing him what is done, and how, at each step. He then brings him back to the job to which he has been assigned and shows him what he has to do, and how his particular job fits into the whole picture. The result has been increased interest and far more efficient work, with a minimum of time required for breaking in.

In another mill, a new department was being organized for an operation for which we had no employees already trained. The men for the job here were first selected based upon their type qualifications as determined by tests for intelligence or mental ability, interest, and personality used in our industrial relations department. This group of men were then taught their new jobs by a supervisor using the JIT methods he had recently studied. The men proved in a very short time to be especially well trained and equipped for the new work. The turnover rate and accident frequency in this new department have been so much lower than the average for the mill as to be astonishing.

In the Job Methods Training, the same general plan is followed as in JIT. This consists, primarily, in teaching how to approach the analysis of a problem in such a way as to be assured that in reaching a conclusion nothing has been overlooked.

The Job Relations Training program again follows the same general method, but deals with the relations between supervisor and the employees for whose work he is responsible to bring about the best results. It might be thought of as a primary or miniature course in Industrial Relations, but by no means takes the place of the activities of the Industrial Relations Department.

Conference Leadership

Another training course that is made available to members of our organization on the supervisory level is one in conference leadership. For this work we have made effective use of a private consultant who uses the institute method of instruction. Some of the points of emphasis in this course are consolidation of information and skill in questioning. It develops:

a. A voluntary acceptance of the conclusions reached on the part of participants in a conference.

b. Ability on the part of a leader in securing active participation by all members of a group.

c. Technique adequate to prevent a voluble member from monopolizing the discussion and to arrive at and summarize conclusions.

Actually, it has been astonishing to observe the rapid

development of certain supervisors under this course of instruction.

More recently, our corporation began working out instruction courses for special groups working in particular fields. For example, classes are now going on in accounting for office employees. These classes are entirely voluntary. The first class was over-filled within a few days after the course was announced.

It is generally recognized that employees are better employees when they have a full understanding of the company for which they are working. With this in mind, each new employee of Crown Zellerbach is provided with a brochure titled "Partners in Industry." While the main objective of this booklet is to set down corporate policies, rules, procedures, employee opportunities, etc., it goes much further. Plant and corporate histories are briefed. Corporate plans for sustained timber supplies and research as elements bearing on security of employment are discussed. Altogether, it gives him a broad acquaintance with the company.

Safety

As in nearly all progressive modern companies, instruction in safety and the importance of maintaining safe working conditions is constantly provided by various methods. Department meetings for frank and open discussion of safety methods and conditions are held regularly, and every encouragement is given to the individual employee to make suggestions and propose methods by which any job may be made safer. Safety committees are named in each division, the personnel of which are changed frequently, to give constant study to the safety program, and to such matters as good housekeeping and safety attitudes, which are so vital to safe operations.

First aid classes are also conducted in all of our operating mills and logging divisions each year, which are open to all who care to enroll. Upon the completion of the first aid course, which follows in general the procedure of the U. S. Bureau of Mines, the graduate is granted a certificate approved by the State.

Many of the hospitals near our mills and camps recognize the fact that men brought to them following some accident have had everything done that should or could be done for them, and several cases are on record where lives have actually been saved, as well as much suffering prevented, by the prompt and intelligent use of the first aid experience acquired in our classes.

Crown Willamette Paper School

The Crown Willamette Paper School, as conducted at our Camas, Washington, Mill, has been described quite fully by A. G. Natwick *(1)* at a previous meeting. It is therefore unnecessary to go into detail concerning it at the present time. The school is now in its 15th year, was operated continually even during the war, and is still well attended and considered a real success. No material changes have been made in organization or methods of instruction in recent years, although the lectures provided for third and fourth year students are varied to some extent from year to year.

This school is free to any employee of the corporation, regardless of position or previous education, training or experience. It has been profitable to Doctors of Philosophy in our research laboratories, and to employees who have never completed a high school education. It is not a trade school, in that it does not teach or prepare a student for any particular job or type of work.

What it does is to provide a good understanding of the various steps in the conversion of wood as grown in the forests into paper and paper products. The instruction cannot be highly technical, but it may be said that men with technical education find it most valuable. The fact that the school is recognized by the University of Washington and Oregon State College, who extend credits for work taken in the paper school which may be applied on the requirements for degrees in chemistry, engineering, and forestry, is in itself evidence of the thoroughness of the instruction given.

The instruction is provided in the form of lectures, largely by the operating supervisors in our mills, but supplemented by recognized authorities and experts in some particular field, and by mill visits and personal study of actual operations in the mill. Our own text book has been prepared, made up principally of the lectures presented by our supervisors. This will be revised from time to time to bring it up-to-date and to make it more complete. In addition, various other books of reference are made available to the students, including, of course, the "Manufacture of Pulp and Paper" prepared by the joint textbook committee.

Moving pictures in color have been made, covering practically every step in the process of converting the trees in our forests into finished paper products, and as each step is described by the lecturer, the pictures are shown. By this double presentation, combining visual and oral instruction, the student obtains a good understanding of the operations involved.

Contacts between students and foremen and supervisors are encouraged, even though at times the man in charge of some department has been put "on the spot" to answer questions concerning the operations for which he is responsible.

The moving picture is also used, from time to time, for the benefit and education of all employees who care to avail themselves of the opportunities. Films are shown without cost at such times as to make it possible for all to view them, regardless of hours or shifts worked. Two films of this kind have been developed for our own use and others are obtained from other sources. Notable among the latter type are such films as "Paper, Pacemaker of Progress," provided by F. C. Huyck & Sons, and "Monarchs of the Forest" by the International Harvester Company. The two films developed under our own direction are "Hemlock Harvest," presenting a typical woods operation, and "Fresh and Good Looking," which covers in a broad way the production and use of paper in the food industries.

Suggestions and Patents

Stimulation of original thinking is, of course, one of the functions of education. A liberal policy is followed in our mills for rewarding employees for the presentation of worthwhile ideas. Suggestion systems are followed by which employees are paid for any suggestions adopted, whether they be of considerable importance in effecting savings or are of merely nominal value from the economic standpoint. In the case of suggestions leading to substantial economies in operation, the amount of the original reward is based upon the estimated anticipated savings, and the maker of the suggestion is further granted a liberal proportion of the actual savings from the first full years use of the idea as determined by the accounting department. These payments have at times run into quite substantial figures.

Patentable inventions by employees are also given liberal recognition. The ideas from which patents may develop are as a rule first recognized as worthwhile suggestions, and are rewarded accordingly. The company assumes all of the cost of prosecuting the patent application through the patent office. The patent, when issued, is assigned to the corporation. Of course, the right to

use such patent in any of its plants is always reserved, but beyond this, it is customary to share with the patentee any profits derived from licensing others under his patent. In some cases, the entire patent has been reassigned to the employee, subject only to our rights to its unrestricted use in our own operations. In certain instances, employees responsible for good patents have benefited from them in a very substantial way. Of course, in the case of research and technical employees, who are employed largely for the purpose of developing new ideas and processes for the benefit of the company, a different policy is followed, but the consideration pertinent to the present discussion is that a policy is pursued with the rank and file of employees which encourages them to do constructive thinking by offering substantial rewards for so doing.

Benefits

Thus far, we have given a brief review of a rather broad program which provides opportunities for self improvement on the part of employees at all levels. The question may be asked: "Does it pay?" and "Who profits most by it?"

While the answers may not be perfectly clear, the results of the program are apparent in many ways.

That the employee who takes advantage of the opportunities provided benefits, there is no question. Examples were mentioned in the discussion of the TWI program, and of the first aid classes. Similar cases could be cited, showing how individual students have profited from their work in the Crown Willamette Paper School.

But not only do the students gain who take advantage of the instruction offered, but the whole body of employees receives a benefit that, although difficult of measurement, is none the less real. The mere fact that some men are studying a problem or process makes it a topic of conversation and discussion. Questions are asked which certainly stimulate thought and interest. Thus the overall knowledge of operations and of the methods of doing things is improved and extended.

Foremen and supervisors have been especially stimulated, both by the responsibility of teaching and by the necessity of answering questions put to them by students of the paper school. The third and fourth year students, in particular, being turned loose in the mill to study manufacturing processes, are encouraged and even required to ask questions of foremen and supervisors. Many questions, thus asked, have inspired those questioned to become better informed about the operations and equipment with which they are concerned.

The other side of the picture is the value of the program to the corporation itself. Of course, any improvement in the average intelligence of the force of employees is reflected in the general overall efficiency of operations. There is ample evidence that employees have thus benefited.

Just how much these things are responsible for can only be a matter of speculation, but it is a fact of which the corporation is proud, that even with the steady increase in the total number of employees over the years, and the addition of more than 800 new employees in the past year, 40% of all of our employees are the proud possessors of pins, testifying to more than 5 years of association with the company.

The educational program has, furthermore, shown itself to have resulted in improved industrial relations and improved public relations, as well.

There can be no question that the former is a direct outcome of the friendly contacts between management, supervision, and employee, provided by the courses of study and the methods of instruction used. Then, too, it is a common practice to make the completion of such courses, whether in the paper school, in first aid, or in other studies, the occasion for banquets, where students, supervisors, and management meet around a common table, where views are exchanged in an atmosphere of friendliness and good will. Employees get the idea, then, that their corporation is not the cold heartless thing that many agitators would have them believe.

It is customary, too, at graduation, banquets, and other similar functions to invite guests representing the press, the schools and colleges, the labor units, the clergy, city officials, chambers of commerce, service clubs, and the like. All this serves not only to encourage the students and those of our employees who may be thinking of joining the ranks of those who seek further education, but, also, it gives the public in the communities we serve a knowledge of the forward looking activities in which we are engaged. They, too, point with pride to an industry which means so much in their community.

Where we may go from here in the furtherance of the educational program is yet to be determined. We feel that a good start has ben made which is well justified by the results now apparent. One of our selfish objectives is to attract the highest type of employees, and to see that the most able among them have such advantages and opportunities that their desire and purpose in life will be to reach the top of the ladder in the Crown Zellerbach Corporation. We believe this is being accomplished.

Literature Cited

1. Natwick, A. G., *Tech. Assoc. Papers*, 28:57-60 (1945).

TAPPI Notes

L. A. Thompson of the Hercules Powder Company has been transferred from Marrero, La. to 134 Peachtree Street, N. W., Atlanta, Ga.

Donald C. Porter is now asst. chief mill manager, Kimberly-Clark Corporation, Kimberly, Wisconsin.

William J. Sprau, formerly of the Detroit Sulphite Pulp and Paper Company, is now plant engineer, National Gypsum Company, Kalamazoo, Mich.

V. J. Westbrook, formerly of the Florida Pulp and Paper Co., is now asst. plant manager, Alabama Pulp and Paper Company, Cantonment, Fla.

T. W. Toovey, formerly of the Pennsylvania Salt Mfg. Company, is now sales engineer for the Cheney Bigelow Wire Works, Springfield, Mass.

Walter L. Hardy, formerly of the Protective Coatings Corporation, is now with Shellmar Products Corporation, Mt. Vernon, Ohio.

George H. Pringle is now assistant chief engineer for the Mead Corp. Chillicothe, Ohio.

J. P. Scarratt, director of Brittains, Ltd. Cheddleton Paper Mills, Leeks, England, is visiting in the United States.

The American Rolling Mill Company, Middletown, Ohio has changed its name to the Armco Steel Corporation.

Viggo Terling, engineer for the Hoganas Company, Hoganas, Sweden is visiting in the United States and Canada. Mr. Terling is an expert on acid proof linings for digesters, etc.

P. H. Clamp of Carr and Company, Shirley, near Birmingham, England, is interested to know if any American company forwarded tonnages of paper to them either direct or through agents during the early part of the recent war. All the records of this company were destroyed by enemy action.